5.0 ENVIRONMENTAL CONSEQUENCES

5.1 INTRODUCTION

This section of the EIS will identify and analyze potential environmental impacts that may result from implementation of the reasonable alternatives. The reasonable alternatives are: Construction and Operation of New USAMRIID Facilities and Decommissioning and Demolition of the Existing USAMRIID Facilities on Area A of Fort Detrick, Maryland (Alternative I), Construction and Operation of New USAMRIID Facilities and Decommissioning and Partial Demolition of the Existing USAMRIID Facilities and Re-use of the Remaining Facilities on Area A of Fort Detrick, Maryland (Alternative II), and No Action (Alternative III). Consequences of Alternative I, Alternative II, and the No Action Alternative on the public, on workers, and the environment will be considered, including direct, indirect, and cumulative effects.

Such an analysis involves detailing the potential impacts associated with the implementation of Alternative I, Alternative II, or Alternative III (No Action) that are reasonably foreseeable but may not necessarily occur. That is, “consequences” refers to the results of an event or events without consideration of probability. Where possible and appropriate, potential events will be characterized both in terms of their potential consequences and the probability that they will occur.

Section 5.2 identifies the potential impacts to the affected environment associated with the implementation of Alternative I, Alternative II, or the No Action Alternative. Section 5.3 presents a comparison of the potential environmental impacts associated with these alternatives.

5.2 ENVIRONMENTAL CONSEQUENCES OF IMPLEMENTATION OF EITHER ALTERNATIVE I OR ALTERNATIVE II AND THE NO ACTION ALTERNATIVE

5.2.1 LAND USE

The impacts of implementation of either Alternative I or Alternative II on land use will be minor and consistent with the adopted Fort Detrick IMP, which designates that area for administrative and research activities as noted in Section 4.1 (USAG, 2003a). As a Federal government site, the local plans and planning policies of the City of Frederick do not apply to Fort Detrick. Development of the property for the proposed new USAMRIID facilities is consistent with the city’s classification of Fort Detrick as Institutional.

Direct land use impacts resulting from construction/demolition/renovation and operation of the proposed new USAMRIID facilities will include conversion of previously undeveloped open land to urbanized, paved surfaces and an increase in activity levels in this area of the Installation. These minor impacts will be offset by positive impacts on land use. The proposed new USAMRIID facilities will be attractive, landscaped buildings that will enhance the appearance of this part of the Installation and complement future Installation development. In addition, forestation amounting to 4.50 acres will be undertaken at a designated forest block within Fort Detrick to satisfy MDNR forest conservation requirements, as noted in Section 2.3.1.6. As part of the Institutional Management Plan for stormwater, runoff from the site of the proposed new USAMRIID facilities will be diverted to a regional stormwater management pond which will be established west of the A-3 outfall (located south of Porter Street). LID sustainability features for stormwater management will be incorporated into the design of the proposed new USAMRIID facilities to the maximum practical extent (see Section 5.2.5.3).

Under the No Action Alternative, the proposed new USAMRIID facilities would not be constructed, and their minor land use impacts would not occur. However, the site would continue to be designated for administrative or research activities associated with Federal agency biodefense programs in the IMP (i.e., the NIBC), and another facility may be constructed on the site instead.

5.2.2 CLIMATE

None of the reasonable alternatives will impact the local climate.

5.2.3 GEOLOGY

Geologic impacts of implementation of either Alternative I or Alternative II will be negligible to minor and mitigable. During the construction/demolition/renovation phases of the proposed new USAMRIID facilities, the minor potential for sinkhole formation will be mitigated by adherence to good structural design practices, and potential impacts to topography and stormwater runoff patterns will be mitigated through use of BMPs. During the operational phase, the potential for groundwater contamination will be mitigated by engineering controls and adherence to SOPs.

Sinkholes, fracture traces, and lineaments must be considered for any development project at Fort Detrick because of underlying limestone formations, as noted in Section 4.3.3 and Section 4.3.4. In areas prone to potential sinkhole formation, uncontrolled development could result in significant consequences. Surface loading, surface drainage and subsurface flows, and soil conditions are among the considerations that should be addressed. The presence of sinkholes or fracture traces may also impact water resources by providing pathways for potential contamination of groundwater.

The geologic conditions at the Stage 1 and Stage 2 sites are considered adequate for development of the proposed new USAMRIID facilities. The closest sinkhole is approximately 540 ft. to the northwest of the Stage 2 site. A planned geotechnical investigation will identify approaches to mitigate impacts of potential sinkhole development on the site of the proposed new USAMRIID facilities. The project will affect recharge patterns of the local aquifer system, but no change in groundwater quality or groundwater contamination is anticipated, as discussed in Section 5.2.5.2.

Sedimentation from erosion during construction/demolition/renovation and increased stormwater runoff following completion of the project will occur, due to site disturbance and the addition of impervious surfaces. Such impacts will be mitigated through adherence to BMPs for construction/demolition/renovation (e.g., silt fencing and dust control) and compliance with MDE stormwater management and sediment and erosion control regulations.

Significant damage to the proposed new USAMRIID facilities resulting from earthquakes will be very unlikely. As noted in Section 4.3.5, Fort Detrick is located within an area that is subject to minor damage due to distant earthquakes.

Under the No Action Alternative the proposed new USAMRIID facilities would not be built, and the geological impacts discussed above would not occur. However, the site may be developed in the future for another biodefense research use, as noted in Section 5.2.1.

5.2.4 SOILS

The impacts of implementation of either Alternative I or Alternative II on soils will be minor and mitigable. During the construction/demolition/renovation phases of the proposed new USAMRIID facilities, minor soil erosion will occur where the ground cover is removed. That impact will be temporary and, as discussed in Section 2.3.1.5, application of BMPs during construction/demolition/renovation will prevent excessive erosion due to excessive stormwater runoff or high winds. The proposed site of the new USAMRIID facilities is underlain by Duffield soils, predominantly silt loams (see Section 4.4), which do not pose any special restrictions for development and erosion control.

Operation of the proposed new USAMRIID facilities does not involve activities that disturb soils. Potential soil erosion due to excessive stormwater runoff will be mitigated by adherence to stormwater management requirements as determined by MDE. Thus, implementation of either Alternative I or Alternative II will have negligible impacts on soils during the operational phase.

Under the No Action Alternative, the proposed new USAMRIID facilities would not be constructed on the proposed site and the potential minor impacts to soils would not occur.

5.2.5 WATER RESOURCES

5.2.5.1 Surface Water

Potential impacts of implementation of either Alternative I or Alternative II on surface waters will be minor and mitigable. Potential sedimentation in surface waters could occur during construction/demolition/renovation of the proposed new USAMRIID facilities if excessive stormwater runoff results in erosion from the site. Under the implementation of either Alternative I or Alternative II such sediment impacts may affect Monocacy River Tributary #9 (Detrick Branch), which was discussed in Section 4.5.1. Adherence to BMPs during the construction/demolition/renovation phases in accordance with MDE standards will mitigate this impact, as discussed in Section 5.2.5.3 below. Thus, implementation of either Alternative I or Alternative II may have temporary, minor impacts on surface waters during the construction/demolition/renovation phases.

During operation of the proposed new USAMRIID facilities, average daily water supply withdrawals from the Monocacy River by the Fort Detrick WTP are estimated to increase by approximately 0.12 mgd under Alternative I or by approximately 0.16 mgd under Alternative II. Alternative I and Alternative II represent an approximately 7 percent or 10 percent increase, respectively, relative to the projected future baseline Installation consumption of water. The future baseline for Installation consumption includes water supply withdrawals for projects currently under construction and planned.

The impact of the operation of the proposed new USAMRIID facilities on the flow of the Monocacy River will be minor and limited in extent, since most of the increased water withdrawals will be returned to the Monocacy River as treated wastewater effluent through the Fort Detrick WWTP (see Section 2.3.3.1) at a point approximately ¼ mile downstream from the WTP. Water losses within the Fort Detrick water distribution and treatment systems will be minor (USAG, 2003a).

The impact of the operation of the proposed new USAMRIID facilities on water quality in the Monocacy River also will be minor. Designation of the Monocacy River as Use IV-P determines the amount of pollutants this water body can receive (see Section 4.5.1), which provides the basis for pollutant discharge limits in the NPDES Permit for the Fort Detrick WWTP. The existing Fort Detrick WWTP meets or exceeds all relevant NPDES restrictions, as discussed in Section 4.15.1.3. Furthermore, qualitative aspects of the treated wastewater from the proposed new USAMRIID facilities, including toxicological properties, are not likely to differ from the current wastewater processed at the WWTP. All wastes originating from BSL-3 and BSL-4 activities at the proposed new USAMRIID facilities will be sterilized prior to discharge to the sanitary sewer system. Sufficient treatment capacity is available to accommodate the sanitary wastewater and sterilized laboratory wastewater discharges from the proposed new USAMRIID facilities (see Section 5.2.15). The projected total sanitary wastewater flow will average 1.11 mgd under Alternative I and will average 1.13 mgd under Alternative II, well within the WWTP capacity of 2.0 mgd. Accordingly, the potential impacts to aquatic life in the Monocacy River are likely to be negligible. Implementation of either Alternative I or Alternative II will have a minor impact on surface waters during the operational phase, mitigated by adherence to the WWTP permit restrictions.

Under the No Action Alternative, the minor impacts to surface water resulting from construction/demolition/renovation and operation of the proposed new USAMRIID facilities would not occur.

5.2.5.2 Groundwater

Implementation of either Alternative I or Alternative II will have minor impacts on groundwater resources, mitigated by compliance with groundwater protection requirements mandated under RCRA (40 CFR 261-270), CERCLA (40 CFR Parts 300-399), and SDWA (42 USC § 300(f) et seq. and 40 CFR Part 144). The SDWA requires state agencies to identify and protect critical aquifer areas.

During the construction/demolition/renovation phases of the proposed new USAMRIID facilities, it is unlikely that a water supply aquifer would be penetrated during excavation for the foundation or utility connections. Potential impacts to aquifers will be mitigated by good construction/demolition/renovation practices determined by USAMRMC construction contract terms and contract management. During the operational phase, minor impacts to local patterns of aquifer recharge will occur due to an increase in impervious surface area. Groundwater quality could be adversely impacted if wastewater, chemical spills or other contamination entered the aquifer. This is unlikely due to requirements for redundant containment facilities both inside and outside the proposed new USAMRIID facilities (e.g., multiple-walled wastewater tanks), as discussed in Section 4.15.4. Any ASTs or USTs used at the proposed new USAMRIID facilities will be equipped with the required leak detection equipment to prevent contamination of groundwater. Procedures are in place to prevent groundwater contamination during the operational phase of the proposed new USAMRIID facilities.

Under the No Action Alternative the minor impacts to groundwater associated with implementation of either Alternative I or Alternative II would not occur.

5.2.5.3 Stormwater

The potential stormwater impacts of implementation of either Alternative I or Alternative II will be minor and mitigable. Implementation of either Alternative I or Alternative II will increase the area covered by impervious surfaces by approximately 15 acres, as noted in Section 2.3.1.6. This will result in increased rates and volumes of stormwater runoff from the proposed new USAMRIID facilities site. Stormwater management practices and control measures will be implemented to mitigate potential adverse impacts resulting from the increased stormwater runoff during both the construction/demolition/renovation and operation phases of the proposed new USAMRIID facilities. All aspects of the stormwater management system for the site, including the drainage channels, culverts, and stormwater retention ponds, will comply with standards established by MDE and will be in accordance with FD REG 420-74, *Facilities Engineering-Storm Water Management*. To the maximum practical extent, features of LID sustainability for stormwater management will be incorporated into the design of the proposed new USAMRIID facilities (see Section 2.3.1.5).

Under the No Action Alternative, the proposed new USAMRIID facilities would not be constructed, and potential hydrologic impacts would not occur. However, the site may be developed for another biodefense research facility in the future, as noted in Section 5.2.1.

5.2.5.4 Drinking Water Supplies

Implementation of either Alternative I or Alternative II will have minor impacts on utility water supply, mitigated by implementation of water conservation measures. During the operational phase of the proposed new USAMRIID facilities, as noted in Section 5.2.5.1, average daily water supply withdrawals from the Monocacy River by the Fort Detrick WTP are estimated to increase by approximately 0.12 mgd under Alternative I and by approximately 0.16 under Alternative II. This increment, in addition to increases for projects currently under construction and planned, will increase average daily total water consumption at the Installation to approximately 1.68 mgd under Alternative I and to approximately 1.72 mgd under Alternative II. This will be well within the treatment process capacity of the Fort Detrick WTP, and it will constitute approximately 84 percent to 86 percent of the 2.0 mgd limit for withdrawals from the Monocacy River under the Installation's Water Allocation Permit (see Section 4.5.1 and Section 4.5.4). At times of drought conditions, water supply limitations may be imposed, and water conservation measures will minimize negative impacts.

USAG has requested Frederick County to include Fort Detrick in its 50 year plan for supplying water to the County. Frederick County has begun upgrading its New Design Water Treatment Plant from its current 6.6 mgd capacity to 25 mgd and ultimately to 45 mgd. The plant will take raw water from the Potomac River. As part of the planning process, USAG has asked that its water requirements be included, ultimately 4 mgd. The County is presently conducting a FS to determine how best to serve Fort Detrick using a dedicated pipeline from the County system. The capacity of the line will serve the current and future needs of Fort Detrick, including the proposed new USAMRIID facilities. After the study is complete, USAG and the County will enter formal negotiations for water service. As the Installation grows, the need for fire suppression will be included in infrastructure designs, and the use of additional water storage towers or fire pumps will be considered.

Under the No Action Alternative, the minor impacts to drinking water would not occur.

5.2.6 WETLANDS AND FLOODPLAINS

Wetland resources are not likely to be impacted by construction/demolition/renovation and operation of the proposed new USAMRIID facilities. The closest wetland is Wetland W-5, approximately 3,200 ft. to the northeast (see Section 4.6). Under the No Action Alternative, the negligible impacts to wetlands would not occur.

No adverse impacts to floodplains are anticipated from implementation of either Alternative I or Alternative II. The site of the proposed new USAMRIID facilities is approximately 3,200 ft. west of the nearest 100-year floodplain (Federal Emergency Management Agency, 1978).

5.2.7 PLANT AND ANIMAL ECOLOGY

The impact of implementation of either Alternative I or Alternative II on plant and animal ecology will be negligible and mitigable. The Fort Detrick grounds are not frequented by special status species, as noted in Section 4.7.3. Thus, it is not likely that any Federal or state listed rare, threatened, or endangered species of plants or animals, or any critical habitat, would be adversely impacted by implementation of either Alternative I or Alternative II. However, construction/demolition/renovation and operation of the proposed new USAMRIID facilities will likely disturb the plant and animal ecology of the immediate area. Some species, particularly birds and deer, will be discouraged from the area through destruction of habitat, dust, erosion, and/or noise. Wildlife that is not mobile enough to avoid construction/demolition/renovation activity (e.g., reptiles and some small mammals) may be lost. These impacts on the local plant and animal ecology will likely be negligible and will be mitigated by adherence to BMPs. In addition, positive impacts to the local plant and animal ecology resulting from the afforestation and reforestation required under the State Forest Conservation Program (COMAR 08.18.04), as discussed in Section 5.2.1, will partially offset the adverse impacts associated with construction/demolition/renovation and operation.

Under the No Action Alternative both the negligible impacts to plant and animal ecology resulting from implementation of either Alternative I or Alternative II and the positive forestation impacts would not occur.

5.2.8 AIR QUALITY

The impacts of implementation of either Alternative I or Alternative II on air quality will be minor and mitigable.

During construction/demolition/renovation of the proposed new USAMRIID facilities, fugitive dust emissions from excavating, grading, and other ground-disturbing activities could affect air quality on Fort Detrick. Air quality effects are not anticipated off post. Adherence to BMPs (e.g., watering exposed surfaces and covering trucks) will mitigate these emissions. These impacts will likely be temporary, localized, and minor.

Increased steam demand during operation of the proposed new USAMRIID facilities may result in a minor increase of emissions of NO_x and SO_x from Fort Detrick. However, utility steam for the new USAMRIID facilities will be produced by the new CUP which will burn natural gas and will be equipped with state-of-the-art emission control technology. This will likely reduce air emissions from the Building 190 Boiler Plant, which burns No. 6 fuel oil as a primary fuel source. The disposal of general solid waste and special medical wastes generated in the proposed new

USAMRIID facilities, as discussed in Section 2.3.3.2 and Section 2.3.3.3, will increase the loading of the Fort Detrick municipal waste incinerators and medical waste incinerators. However, any increase of air pollutant emissions from these sources will be minimized by adherence to their respective permit limits and operational requirements. Increased air pollutant emissions from the Building 190 or CUP boilers amounting to 100 tpy of NO_x or 100 tpy of SO_x would require a NSR/PSD review in accordance with the CAA and COMAR 26.11.17, as noted in Section 2.3.1.8 (Mummert, 2004; Paul, 2004; Wolf, 2004a). In accordance with the CAA, a Conformity Analysis has been prepared concurrently with this EIS. That analysis concluded that implementation of either Alternative I or Alternative II will not result in emissions above the thresholds for NO_x, VOCs, or $PM_{2.5}$ (see Appendix J).

Air quality in the Frederick area also could be impacted by vehicular emissions of air pollutants from supplier deliveries and commuting activities of the workforce during both the construction/demolition/renovation and operational phases of the proposed new USAMRIID facilities. These vehicular emissions will likely be a negligible increment relative to the total vehicular emissions in the Frederick area for the implementation of either Alternative I or Alternative II (see Appendix J).

Under the No Action Alternative the minor impacts to air quality associated with the implementation of either Alternative I or Alternative II would not occur.

5.2.9 HISTORICAL AND CULTURAL RESOURCES

Implementation of either Alternative I or Alternative II will result in significant impacts on historical resources. Although no historic, architectural, archeological, or cultural resources are located on the parcels designated for the new USAMRIID facilities, three NRHP-eligible sites, Buildings 1412, 1414, and 1415, are located directly west of the proposed USAMRIID Stage 1 parcel (see Section 4.9.2.2) and will be demolished. Buildings 1412, 1414, and 1415 have been extensively modified from their original state over the years. The SHPO has determined the buildings are eligible for listing on the NRHP. A Section 106 review process must be completed prior to the implementation of either Alternative I or Alternative II. The Section 106 review will be undertaken between USAG and the SHPO. USAG will enter into an MOA which will detail USAG's responsibilities concerning the affected buildings through specific treatment measures, which may include a Formal Recordation Process. Recordation of a historic property ensures that information about the property will be available to the public and future researchers after demolition. Recordation may include photographs, drawings, written architectural descriptions, written or documented oral history, and commemorative plaques or other markers (Boyland, 2006a).

The closest NRHP-listed sites to the proposed new USAMRIID facilities are within the Nallin Farm Complex (see Section 4.9.2.1). The closest eligible archaeological resource is the Stonewall Jackson Beall Site (18FR683) (see Section 4.9.3). Adverse impacts to these historical and cultural resources during the construction/demolition/renovation phases (e.g., fugitive dust) will be negligible, and will be mitigated by adherence to BMPs and to any requirements specified by the SHPO. Impacts to historical and cultural resources will be negligible during the operational phase of the proposed new USAMRIID facilities, since the operations will be similar to activities that have been conducted for decades in the existing USAMRIID facilities, with no observed damage to or interference with activities in neighboring structures.

The impacts to historic and cultural resources resulting from implementation of either Alternative I or Alternative II would not occur with implementation of the No Action Alternative.

5.2.10 SOCIOECONOMIC ENVIRONMENT

Implementation of either Alternative I or Alternative II will have minor beneficial economic impacts for the economies of the City of Frederick and Frederick County. During the construction/demolition/renovation phases, local vendors, contractors, and construction workers will benefit from work associated with this project. During the operational phase, approximately 550 additional workers will be assigned to the proposed new USAMRIID facilities. It is anticipated that almost all of the workers will reside in Frederick County, many within the City of Frederick. Their salaries and wages will contribute directly to the local economy. These increments will comprise only a minor component of the projected population and employment growth (approximately 43,000 additional residents and an estimated increase in the employed workforce of over 41,000) for Frederick County in the first decade of the 21st century, as discussed in Section 4.10.1.

Construction and operation of the proposed new USAMRIID facilities is not anticipated to have a significant adverse effect on residential property values near Fort Detrick. No significant impacts are anticipated for the attributes that would be perceived as detrimental for property values, i.e., human health and safety, noise, nuisance lighting, and odors.

Under the No Action Alternative, the positive impacts to the socioeconomic environment resulting from implementation of either Alternative I or Alternative II would not occur.

5.2.11 NOISE AND LIGHTING

Noise impacts from the implementation of either Alternative I or Alternative II will be minor and mitigable. Noise from construction/demolition/renovation activities and subsequent operation of the proposed new USAMRIID facilities may disturb the local plant and animal ecology, as noted in Section 5.2.7. Excessive noise levels could impact the health of the workforce and/or the residents of housing facilities on Fort Detrick or in neighboring communities. The State of Maryland (COMAR 26.02.03.02 and 26.02.03.03) and the City of Frederick (Ordinance G-02-9) have established environmental noise standards that set maximum allowable noise levels for receivers located in industrial, commercial, and residential districts.

During the construction/demolition/renovation phases of the proposed new USAMRIID facilities, operation of power machinery and other construction/demolition/renovation activities will result in a temporary increase in the noise level in the immediate vicinity of the site. Noise impacts on the health of construction workers will be mitigated by adherence to OSHA standards for occupational noise exposure associated with construction (29 CFR 1926.52). Noise impacts on nearby residents will be mitigated by adherence to the regulatory limit for construction/demolition/renovation activities of 90 dBA at the boundaries of the site [COMAR 26.02.03.03 A(2)(a); Ordinance G-02-9].

Noise impacts from normal operations at the proposed new USAMRIID facilities will be temporary, localized, and negligible. Activities in the proposed new USAMRIID facilities will be similar to those in laboratory buildings elsewhere on Area A of Fort Detrick. As noted in Section 4.11, sound levels generated by existing Fort Detrick operations were determined to be

compatible with nearby residential use. The regulatory limits for noise levels for receivers in residential areas are 65 dBA during daytime hours and 55 dBA at night.

The noisiest recurring operation associated with the proposed new USAMRIID facilities may be the weekly testing of emergency generators. The impact will be mitigated by limiting the test to one-minute duration, during daylight hours. Potential excessive generator noise levels will also be mitigated by the requirement to enclose the generator within a sound buffering structure. The closest residences to the proposed new USAMRIID facilities will be military housing approximately 1,100 ft. to the east-southeast.

During a power outage, the USAMRIID emergency generators could run for hours. The regulatory noise restrictions would not apply during an emergency situation (COMAR 26.02.03.03 B). The location of the new USAMRIID facilities will be at the center of Area A more than 1,200 ft. from the Installation security fence.

Lighting for USAMRIID at this location will be for parking and security purposes, is not expected to create any nuisance to neighbors, and will result in minor impacts. The location of the new USAMRIID facilities will be at the center of Area A more than 1,200 ft. from the Installation security fence.

The minor noise and light impacts associated with the implementation of either Alternative I or Alternative II would not occur with implementation of the No Action Alternative.

5.2.12 ODORS

The impacts of odors resulting from implementation of either Alternative I or Alternative II will be minor. During the construction/demolition/renovation phases, fueling of power equipment will result in petroleum odors, but the effects will be localized, transient, and minor. Odors generated during the operational phase of the proposed new USAMRIID facilities will be similar to those currently generated in existing NCI-Frederick and USAMRIID laboratories. As noted in Section 4.12, offensive odors resulting from autoclaving, steam sterilization, or laboratory animal activities at those facilities are localized and transient. The potential odors generated by the incinerators and the Building 190 Boiler Plant, discussed in Section 4.12 will increase as a result of the increased loading of these facilities due to the proposed new USAMRIID facilities. However, such increases will comprise a minor increase in the existing plant loadings, as noted in Section 2.3.2 and Section 2.3.3.

The minor odor impacts associated with construction/demolition/renovation and operation of the proposed new USAMRIID facilities would not occur with implementation of the No Action Alternative.

5.2.13 TRANSPORTATION

The impacts of implementation of either Alternative I or Alternative II on transportation will be minor. Construction/demolition/renovation and operation of the proposed new USAMRIID facilities will result in increased traffic on Fort Detrick and in areas adjacent to the Installation. During the construction/demolition/renovation phases, contractor personnel, inspectors, and supplier deliveries will temporarily increase vehicular traffic. These temporary impacts may be mitigated by project-specific vehicle access restrictions (e.g., limiting gates and hours). In

addition, workers may park in Area B and be bused to and from the proposed new USAMRIID facilities site to mitigate potential impacts to parking and traffic.

A comparison of current traffic loadings to major roads serving Fort Detrick with projected traffic loading increases to Fort Detrick gates and their corresponding arterials indicates that the impacts of traffic associated with the operation of the new USAMRIID facilities will be minor (see Table 5-1).

Table 5-1. Estimated Traffic Loadings from Fort Detrick to Major Roads Serving the Installation. Measured by Projected Increase in Gate and Local Traffic. [1]

	BASELINE[2] (Current)	APPROVED AND PLANNED PROJECTS[3,4] (Future)
Opossumtown Gate (both directions on Opossumtown Pike)	Less than 15%	Less than 15%
Rosemont and Old Farm Gates (both directions on Rosemont Ave.)	Less than 23%	Less than 23%
Veterans Gate (Heading toward Area A on W. 7th St. and Military Rd.)	51%	50%

[1] Each percentage estimate represents the contribution of each Fort Detrick Area A gate to the total traffic volume traveling on their corresponding arterial(s).
[2] Baseline estimates represent the current contribution of each Fort Detrick Area A gate to their corresponding arterial(s).
[3] Approved and planned project estimates represent the current contribution of each Fort Detrick Area A gate plus incremental increases from USAMRIID, NIAID IRF, DHS NBACC Facility, Fort Detrick IMP, BRAC, VA CBOC, CUP, and NCI. The traffic loading contributed by USAMRIID will account for less than a quarter of the projected increase in vehicles for all gates due to approved and planned projects.
[4] Local traffic projections are assumed to be proportional to Frederick County employment growth (16.6%) detailed in the Frederick County data for the period 2005-2010 (Frederick County Division of Planning, 2006).

The population of Frederick County area will continue to grow at a robust rate as noted in Section 4.10.1. For example, the projected employment growth for Frederick County is expected to increase 16.6 percent between 2005 and 2010. Employment growth at Fort Detrick for the same time period will be approximately 17.4 percent. Thus, the rates of employment growth in Frederick County and Fort Detrick are nearly identical, and indicate that the future development of Fort Detrick is comparable to anticipated countywide development and associated traffic loadings. Expanded telecommuting and carpooling opportunities for Fort Detrick employees will help alleviate Fort Detrick related traffic impacts.

Anticipated traffic impacts from the development of Fort Detrick are summarized below:

- The Veterans Gate will continue to be the most heavily utilized gate when approved and planned projects are included in the future traffic loadings. The Veterans Gate will receive approximately 50 percent of the total daily vehicles traveling either northeast on Military Road or northwest on West Seventh Street, towards Area A based on the

current contribution of traffic plus incremental increases from operation of the new USAMRIID facilities and approved and planned projects.

- The Opossumtown Gate will service less than 15 percent of the total daily vehicles traveling on Opossumtown Pike based on the current contribution of Opossumtown Gate traffic plus incremental increases from operation of the new USAMRIID facilities and approved and planned projects.
- The Rosemont and Old Farm Gates collectively will service less than 23 percent of the total daily vehicles traveling on Rosemont Avenue based on the current contributions of Rosemont and Old Farm Gates traffic plus incremental increases from operation of the new USAMRIID facilities and approved and planned projects.
- Approximately 31 percent of the total daily vehicles traveling on Rosemont Avenue, Military Road, West Seventh Street and Opossumtown Pike collectively will be entering and leaving Area A based on the current contribution of Area A traffic plus incremental increases from operation of the new USAMRIID facilities and approved and planned projects.

As noted in Section 4.13.2, recent improvements to the Veterans Gate have increased capacity and reduced queuing onto Seventh Street and Military Road. The small increment of traffic loading from the operation of the new USAMRIID facilities is expected to result in minor impacts to major roads serving Area A of Fort Detrick.

Increased traffic from the operation of the new USAMRIID facilities will add to existing traffic loading of Porter Street and Ditto Avenue, the primary access roads to the site. This will comprise a minor increase to the current loading of these roadways. However, the additional traffic will likely be concentrated at the morning and afternoon commuting times when traffic is heaviest. Recent improvements to the Veterans Gate, Opossumtown Gate, Old Farm Gate, and ongoing improvements to Installation roadways are expected to mitigate traffic congestion on the Installation and in areas adjacent to Fort Detrick. Representatives of USAG, the City of Frederick, and Frederick County are evaluating current and future traffic conditions in and around Fort Detrick as well as other shared infrastructural concerns (Sheffer, 2006c).

Workers in the proposed new USAMRIID facilities and official visitors will use the NIBC parking lot, currently under design, to be located near the proposed new USAMRIID facilities. As noted in Section 2.1, the NIBC parking lots will provide more than 1,700 vehicles spaces, which will adequately address the parking needs for the approximately 1,300 personnel projected at the proposed new USAMRIID facilities (John Gallup and Associates, 2006). During the construction/demolition/renovation phases of the proposed new USAMRIID facilities, the contractor will have responsibility to ensure that construction/demolition/renovation activities and worker parking will not interfere with traffic flow. Thus, the impact of the proposed new USAMRIID facilities on parking will be minor.

The minor impacts to transportation associated with implementation of either Alternative I or Alternative II would not occur with implementation of the No Action Alternative.

5.2.14 ENERGY RESOURCES

Construction/demolition/renovation of the proposed new USAMRIID facilities will have negligible impacts on energy resources relative to energy consumption in the Frederick area. During the construction/demolition/renovation phases, the impact of diesel fuel demands for power

equipment and movement of materials, and gasoline for workforce commuting, will be temporary and negligible relative to the consumption of these fuels in the Frederick area.

Minor impacts will result during operation of the proposed new USAMRIID facilities. As discussed in Section 2.3.2, the estimated steam requirements for operation of the proposed new USAMRIID facilities will increase the total Fort Detrick usage to approximately 23 percent of the capacity under Alternative I and to approximately 24 percent under Alternative II. The total consumption of the electrical power is estimated to increase relative to the current total by approximately 27 percent for Alternative I and by approximately 32 percent for Alternative II, well within the utility capacity. The natural gas and fuel oil consumption associated with operation of the proposed new USAMRIID facilities is an indirect impact, representing increased demand for steam from the CUP boilers and increased incinerator operation. Since the CUP will supply steam for the new USAMRIID facilities, natural gas consumption is expected to increase and No. 6 fuel oil consumption is expected to decrease. Energy management practices of the proposed new USAMRIID facilities will follow guidelines set forth in EO 13123, *Greening the Government Through Efficient Energy Management*, 8 June 1999.

The negligible to minor impacts to energy resources associated with implementation of either Alternative I or Alternative II would not occur with implementation of the No Action Alternative.

5.2.15 POLLUTION PREVENTION AND WASTE STREAM MANAGEMENT

Construction/demolition/renovation of the proposed new USAMRIID facilities will have a minor impact on Fort Detrick's waste management systems. The construction/demolition/renovation contractor will have responsibility for adhering to regulatory requirements for the disposal of wastewater, solid waste, hazardous waste, and construction/demolition/renovation debris outside Fort Detrick and in accordance with Federal, state, and local regulatory requirements, as noted in Section 2.3.1. In accordance with Army policy for *Sustainable Management of Waste in Military Construction, Renovation, and Demolition Activities* (DA, 2006), the contracts will include a performance requirement for 50 percent minimum diversion of construction and demolition waste by weight from landfill disposal (see Section 2.3.1.4). The contract specifications will include submission of a contractor's construction and demolition Waste Management Plan. Construction and demolition waste will be managed in accordance with LEED guidelines. During the construction/demolition/renovation phases of the proposed new USAMRIID facilities, pollution prevention will be practiced through source reduction and conservation in accordance with EO 13101, *Greening the Government Through Waste Prevention, Recycling, and Federal Acquisition*, 14 September 1998. As stated in Section 2.3.1.3, a material-specific risk assessment for salvaging materials will be conducted prior to demolition of the existing USAMRIID facilities, as specified in Appendix I.

Operation of the proposed new USAMRIID facilities will likely have minor impacts on the Installation's waste management systems. All potentially infectious wastewater generated in the BSL-3 and BSL-4 laboratories will undergo the required steam sterilization or chemical disinfection before discharge directly into the sanitary sewers. Since the proposed new USAMRIID facilities will not use the existing LSS (see Section 4.15.1.2) and will be located approximately 220 ft. from the nearest portion of the existing LSS, there will be no impacts on the existing LSS from construction/demolition/renovation or operation of the proposed new USAMRIID facilities.

The total amount of wastewater produced at the Installation is estimated to increase to approximately 55 percent of the WWTP capacity under Alternative I and to approximately 57 percent under Alternative II. As noted in Section 2.3.2.1, the proposed new USAMRIID facilities will incorporate features that will lessen the demand for water, which will minimize production of wastewater as per LEED guidelines. The total volume of potentially contaminated wastewater generated by operational activities in the proposed new Stage 1 facilities is estimated to amount to approximately 33 percent of the new SSP capacity under Alternative I and to approximately 42 percent under Alternative II. The proposed new Stage 2 facilities will be designed with adequate autoclave capacity in the laboratories to ensure decontamination of the potentially contaminated wastewater in accordance with BMBL guidelines (CDC/NIH, 1999).

The total amount of MSW generated at the Installation is estimated to increase to approximately 74 percent of the MSW incinerator capacity under Alternative I and to approximately 76 percent under Alternative II. The total amount of special medical waste generated at the Installation is estimated to increase to approximately 32 percent of the medical incinerator capacity under Alternative I and to approximately 33 percent under Alternative II.

Thus, the projected quantities of wastewater, laboratory wastewater, MSW, and special medical waste noted in Section 2.3.3 (see Table 2-2 and Table 2-3) represent minor increments under either Alternative I or Alternative II, well within existing waste management system capacities and Federal and state permit limits, as discussed in Section 4.15.

The proposed new USAMRIID facilities will be designed with adequate SAP and 90-day storage area capacity for proper management of the hazardous wastes in accordance with RCRA and COMAR requirements. As discussed in Section 4.15.5, USAG no longer holds an NRC license (Hudlow, 2005). Therefore, the amount of radiological waste generated at the Installation as a whole is no longer tabulated. The proposed new USAMRIID facilities will be designed with adequate storage capacity for proper management of the radiological wastes in accordance with NRC requirements. Thus, the proposed new USAMRIID facilities will have a minor impact on management of hazardous waste and radiological waste under either Alternative I or Alternative II.

Furthermore, hazardous materials management in the proposed new USAMRIID facilities will include an active pollution prevention program in accordance with USAG policies. Pollution prevention will be practiced through source reduction and conservation or by elimination of toxic materials during the operational phase of the implementation of either Alternative I or Alternative II, following the objectives of the Fort Detrick EMS.

Under the No Action Alternative, the minor impacts to waste management systems at Fort Detrick would not occur.

5.2.16 HAZARDOUS MATERIAL MANAGEMENT

The impact of Hazardous Material Management associated with implementation of either Alternative I or Alternative II will be minor. During the operational phase of the proposed new USAMRIID facilities, USAG oversight of hazardous material handling will ensure compliance with applicable OSHA safety regulations and RCRA regulations for hazardous waste treatment, storage, and disposal. During the construction/demolition/renovation phases, adherence to contract provisions will ensure proper management of hazardous materials.

Under the No Action Alternative, the minor impacts to hazardous material management systems at Fort Detrick would not occur.

5.2.17 HUMAN HEALTH AND SAFETY

The impact of implementation of either Alternative I or Alternative II on human health and safety will be negligible to minor. Human health and safety impacts may potentially occur both during construction/demolition/renovation and operation of the proposed new USAMRIID facilities. Compliance with OSHA regulations will mitigate adverse impacts to the workforce during the construction/demolition/renovation phases.

The potential impacts to human health and safety would not occur under the No Action Alternative.

5.2.17.1 Occupational Health and Safety

The impact of implementation of either Alternative I or Alternative II on occupational health and safety will be negligible and mitigable. During the construction/demolition/renovation phases of the proposed new USAMRIID facilities, potential minor impacts to the health and safety of construction workers will be minimized by adherence to accepted work standards and OSHA regulations (29 CFR 1926, *Safety and Health Regulations for Construction*). Similarly, no significant impacts to the health and safety of workforce are anticipated during the operational phase. The research activities at the proposed new USAMRIID facilities will involve using etiologic agents that are capable of causing human disease and the use of laboratory animals that may be infected with etiologic agents transmissible to humans. The inherent risks of these activities to worker health and safety will be mitigated by adherence to engineering controls and work practices to contain and isolate etiologic agents described in the BMBL (CDC/NIH, 1999) and numerous other Federal, state, and local regulations (see Sections 2.3.4.1 and 2.3.4.2). The limited number of documented cases of LAIs during the last 10 years in biomedical laboratories throughout the U.S., including USAMRIID, demonstrates the effectiveness of these mitigation measures (Rusnak *et. al.*, 2004a; 2004b, 2004c; USAMRMC, 2004; Johnson, 2003; Harding and Byers, 2000; CDC/NIH, 1999; Sewell, 1995).

In addition, regular medical monitoring will be provided for those employees engaged in work with etiologic agents. To the extent that licensed or investigational vaccines are available, individuals working in those laboratories will be offered immunization (see Section 2.3.4.3). However, vaccines do not exist for most of the BSL-4 agents. Workers unable to undergo vaccination for medical reasons will not be permitted to work with the associated etiologic agents and will not be permitted entry into containment suites where vaccinations are required.

The negligible impacts to occupational health and safety would not occur under the No Action Alternative.

5.2.17.2 Public Health and Safety

The impact of implementation of either Alternative I or Alternative II on public health and safety during construction/demolition/renovation of the proposed new USAMRIID facilities will be negligible to minor. Increased heavy truck traffic may result in increased vehicular or pedestrian accidents.

Based on the hazard analyses presented in Appendix H, the probabilities of adverse impacts on human health and the environment occurring during operation of the proposed new USAMRIID facilities are remote, given the planned operational and facility safeguards:

- Release of an etiologic agent to the environment (for example, by emission with exhaust air from the biological containment facilities or by escape of an infected laboratory animal) could potentially expose workers elsewhere on Fort Detrick or nearby residents to risk of infection or disease. These risks will be mitigated by adherence to BMBL standards (CDC/NIH, 1999) for engineering controls and work practices for biological containment, as discussed in Section 2.3.4.1 and Section 2.3.4.2. There have been no documented instances of infection or disease in communities adjacent to biodefense research facilities similar to the proposed new USAMRIID facilities resulting from the conduct of these types of activities. See also Appendix H, Sections 1 and 2.
- Accidents during shipment of etiologic agents to or from the proposed new USAMRIID facilities could potentially expose members of the public outside Fort Detrick to risk of infection or disease. These risks will be mitigated by adherence to the regulations for the transportation of etiologic agents and registration of facilities, as discussed in Section 2.3.4.5. There have been no known instances of infection or disease resulting from accidents related to transportation during more than 60 years of shipping of infectious materials through postal services or regulated common carriers in the U.S. (USAMRMC, 2004). See also Appendix H, Section 3.
- USAG will conduct a Vulnerability Assessment to evaluate the risks of potential terrorist acts on the proposed new USAMRIID facilities. The Vulnerability Assessment and its associated details will not be available for public review. Potential exposure of the public to an etiologic agent due to incidents such as theft or sabotage will be mitigated by the biosurety program for the proposed new USAMRIID facilities incorporating agent accountability, security, personnel reliability, and safety, as discussed in Section 2.3.4.8. See also Appendix H, Section 4.
- The risk of accidental release of a biological agent to the environment due to an external accident or natural disaster will be mitigated by redundancy of safety equipment and emergency procedures, operational safeguards, and monitoring systems, as discussed in Section 2.3.4.3. See also Appendix H, Section 5.
- The risk of inadvertent transmission of diseases from biosafety laboratory workers at the proposed new USAMRIID facilities to other workers, family members, or the general public is remote. LAIs are rare, as indicated by the limited number of documented LAIs during the last 10 years in biomedical laboratories throughout the U.S. Training of personnel, management and oversight of laboratory operations, and medical surveillance of personnel, as described in Section 2.3.4, are the principal components for preventing inadvertent transmission of infectious agents. See also Appendix H, Section 6.
- The risk to laboratory workers from laboratory air re-entrainment at the proposed new USAMRIID facilities is negligible. To ensure that the exhaust design of all of the facilities on the NIBC is adequate, specific design specifications are being incorporated into the design of all the laboratories on the NIBC to reduce the likelihood that air exhausted from any of the chemicals hoods will not be recaptured by the clean air intakes. See also Appendix H, Section 7G.

A mutual aid agreement for the coordination of emergency medical services between the Army and Frederick County and the FCVFRA became effective on 1 October 2002. The FCVFRA represents the volunteers who provide local emergency medical services. The agreement will

ensure compliance with community right-to-know statutes and regulations (USC 42, Title 42, Chapter 116, *Emergency Planning and Community Right-To-Know Act*).

The negligible to minor impacts to public health and safety associated with the proposed new USAMRIID facilities would not occur under the No Action Alternative. However, implementation of the No Action Alternative would also eliminate the significant positive impacts to public health and safety that will accrue if the research activities planned for the new USAMRIID facilities are conducted. The planned activities for the new USAMRIID facilities include basic research, applied research, and advanced technology development on biological threats, resulting in medical solutions to protect military personnel. Additionally, USAMRIID will support government-wide biological defense efforts by acting as the DoD's lead laboratory for T&E of medical biological defense products.

5.2.18 ENVIRONMENTAL JUSTICE

The potential impacts of implementation of either Alternative I or Alternative II to Environmental Justice will be negligible and mitigable. During the construction/demolition/renovation phases of implementation of either Alternative I or Alternative II, minority and/or low-income communities could be economically impacted if they are excluded from the economic benefits arising from construction/demolition/renovation activities. Such adverse Environmental Justice impacts are mitigated by the requirement that all vendors and contractors participating in the construction/demolition/renovation and operational phases of implementation of either Alternative I or Alternative II must adhere to Equal Employment Opportunity and Affirmative Action considerations as identified in 29 CFR 1608.

EO 12898, *Federal Actions to Address Environmental Justice in Minority and Low Income Populations*, requires Federal agencies to consider whether their projects will result in disproportionate adverse impacts on minority or low-income populations. The U.S. Census considers a poverty area as one where at least 20 percent of the population lives below the poverty level, which it defines as the income level (based on family size, age of householder, and the number of children under 18 years of age) that is considered too low to meet essential living requirements, without regard to the local cost of living. As discussed in Section 4.10.1, the Frederick area is not considered a poverty area.

It is unlikely that implementation of either Alternative I or Alternative II will have proportionately greater impact on disadvantaged (e.g., minority, low income) populations than the No Action Alternative.

5.2.19 CUMULATIVE IMPACTS

The CEQ regulations implementing NEPA define cumulative impacts to the environment as those effects resulting from the impact of implementation of either Alternative I or Alternative II when combined with past, present, and future actions (40 CFR 1508.7). Thus, cumulative impacts are the sum of all direct and indirect impacts, both adverse and positive, that result from the incremental impacts of implementation of either Alternative I or Alternative II when added to other past, present, and reasonably foreseeable future actions regardless of source. Cumulative impacts may be accrued over time and/or in conjunction with impacts from other activities in the area (40 CFR 1508.25).

As detailed throughout Section 4.0 of this EIS, both Frederick County and Fort Detrick will continue to experience unprecedented growth in the future. Projects which will be operational in the next several years include projects identified in the IMP EA, RCI, NIAID IRF, DHS NBACC, VA CBOC, commissary, and the CUP in addition to the new USAMRIID facilities (collectively Fort Detrick future development). A significant portion of the cumulative environmental impacts from the development of Fort Detrick will result from the construction and operation of the facilities on the NIBC, including the new USAMRIID facilities.

The discussion below summarizes the cumulative impacts of all future development at Fort Detrick and integrates the collective environmental impacts of all these projects. The collective increases in employment, building construction activities, and associated environmental impacts with the overall development of Fort Detrick are detailed throughout Section 5.0 by environmental attribute area. The potential cumulative impacts resulting from implementation of either Alternative I or Alternative II will be minor and mitigable.

5.2.19.1 Land Use

The cumulative impacts of implementation of either Alternative I or Alternative II on land use will be minor. Fort Detrick future development includes projects identified in the IMP EA, RCI, NIAID IRF, DHS NBACC, VA CBOC, commissary, and the CUP in addition to the new USAMRIID facilities. As discussed in Section 5.2.1, the proposed site of the new USAMRIID facilities is designated for administrative and research activities and is consistent with other development on the NIBC. Although conversion of previously undeveloped open land to urbanized, paved surfaces will occur, positive impacts in the form of forestation amounting to 4.50 acres will be undertaken at a designated forest block within Fort Detrick.

5.2.19.2 Climate

No cumulative impacts to climate are anticipated from the implementation of either Alternative I or Alternative II.

5.2.19.3 Geology and Soils

The cumulative impacts of implementation of either Alternative I or Alternative II on geology and soils will be minor, including impacts from Fort Detrick future development. The geologic and soil conditions at the NIBC are considered adequate for development of the proposed new USAMRIID facilities, as discussed in Section 5.2.3 and Section 5.2.4. Continued adherence to good structural design practices and BMPs during the development of the NIBC have mitigated impacts to topography and stormwater runoff patterns.

5.2.19.4 Water Resources

Minor cumulative impacts are anticipated to water resources with implementation of either Alternative I or Alternative II, including impacts from Fort Detrick future development. Although operation of the proposed new USAMRIID facilities will add to existing and planned demands for water supply on the Installation, the cumulative total consumption will be within the existing capacity of the Fort Detrick water supply system, as discussed in Section 2.3.2.1 (Alternative I = 84%; Alternative II = 86%) and Section 5.2.5.4. Drought conditions in the Monocacy River, as discussed in Section 4.5.1, and limitations of the existing water distribution system with respect to pipe size and pressures, as discussed in Section 4.5.4.3, could potentially interfere with the

delivery of the required water supply to all users at Fort Detrick. Therefore, minor cumulative impacts to water supply will result from implementation of either Alternative I or Alternative II. Water conservation measures and development of additional water supply sources will mitigate the cumulative impacts resulting from drought conditions.

Construction and operation of the proposed new USAMRIID facilities will result in increased rates and volumes of stormwater runoff, as indicated in Section 5.2.5.3. Since this will be in addition to increases resulting from other projects currently under design or construction, minor cumulative impacts to stormwater management will result from implementation of either Alternative I or Alternative II. The study evaluating stormwater management options for the entire south-central portion of Area A noted in Section 4.5.3 will lead to a new regional stormwater management plan for the entire south-central portion of Area A, including the NIBC.

5.2.19.5 Wetlands and Floodplains

No cumulative impacts are anticipated to wetlands and floodplains (see Section 5.2.6).

5.2.19.6 Plant and Animal Ecology

The cumulative impacts of implementation of either Alternative I or Alternative II on plant and animal ecology will be negligible, including impacts from Fort Detrick future development. Some species will be discouraged from the area through destruction of habitat, dust, erosion, and/or noise. However, there are no special status species on Fort Detrick, as discussed in Section 4.7.3. Positive cumulative impacts to the local plant and animal ecology will result from the afforestation and reforestation requirements (habitat creation).

5.2.19.7 Air Quality

The cumulative impacts of implementation of either Alternative I or Alternative II on air quality will be minor, including impacts from Fort Detrick future development. In accordance with the CAA, a Conformity Analysis has been prepared concurrently with this EIS and has concluded that implementation of either Alternative I or Alternative II will not result in emissions above the thresholds for NO_x, VOCs, or $PM_{2.5}$ (see Appendix J). Since the utility steam for all of the NIBC facilities will be produced by the new CUP which will burn natural gas rather than No. 6 fuel oil, overall air emissions from Fort Detrick will decline because the CUP will be equipped with state-of-the-art emission control technology. As discussed in Section 2.3.3.2 and Section 2.3.3.3, the disposal of general solid waste and special medical wastes generated from the proposed new USAMRIID facilities and other facilities on the NIBC, will increase the loading of the Fort Detrick municipal waste incinerators (Alternative I = 74%; Alternative II = 76%) and medical waste incinerators (Alternative I = 32%; Alternative II = 33%). The loadings to the incinerators and associated air emissions are well within the permit limits set forth by MDE. Cumulative impacts to air quality from increased vehicle emissions will be a negligible component of the total vehicular emissions in the Frederick area.

5.2.19.8 Historical and Cultural Resources

Significant cumulative impacts to historical resources are expected with implementation of either Alternative I or Alternative II. Three NRHP-eligible sites, Buildings 1412, 1414, and 1415 (see Section 4.9.2.2) will be demolished. A Section 106 review will be undertaken between USAG and the SHPO. USAG will enter into an MOA which will detail USAG's responsibilities

concerning the affected buildings through specific treatment measures, which may include a Formal Recordation Process. Other historical and cultural resources on Fort Detrick will not be impacted.

5.2.19.9 Socioeconomic Environment

Positive cumulative impacts to the socioeconomic environment will be associated with implementation of either Alternative I or Alternative II, including impacts from Fort Detrick future development. The construction and operation of the facilities on the NIBC will have minor beneficial economic impacts for the economies of the City of Frederick and Frederick County. As discussed in Section 4.10.1, the salaries and wages from the workforce of the NIBC, including USAMRIID workers, will contribute directly to the local economy. These increments will comprise only a minor component of the projected population and employment growth for Frederick County.

Construction and operation of the NIBC, including the new USAMRIID facilities, is not anticipated to have a significant adverse effect on residential property values near Fort Detrick. No significant impacts are anticipated for the attributes that would be perceived as detrimental for property values (i.e., human health and safety, noise, nuisance lighting, and odors).

5.2.19.10 Noise and Lighting

Minor cumulative impacts to the baseline noise levels on and adjacent to Fort Detrick are anticipated, including impacts from Fort Detrick future development. As discussed in Section 4.11, noise from traffic on arterial streets adjoining Area A will likely increase with time. Noise associated with operation of the proposed new USAMRIID facilities and other projects currently under design or construction on the NIBC, will result in minor noise impacts for residents of military housing on Area A or adjoining private homes. The most new significant noise sources, testing of the emergency generators on the NIBC, will be scheduled to avoid simultaneous tests.

Negligible cumulative increases to nuisance lighting from the NIBC are anticipated implementation of either Alternative I or Alternative II. The location of the new USAMRIID facilities, the NIAID IRF, and the DHS NBACC Facility are at the center of Area A, approximately 1,000 feet from the Installation security fence. Lighting for the facilities will be for parking and security purposes.

5.2.19.11 Odors

The cumulative impacts of odors resulting from implementation of either Alternative I or Alternative II will be minor, including impacts from Fort Detrick future development. During the construction/demolition/renovation phases, fueling of power equipment will result in petroleum odors, but the effects will be localized, transient, and minor. Odors generated during the operational phase of the proposed new USAMRIID facilities will be similar to those currently generated in existing NCI-Frederick and USAMRIID laboratories. As noted in Section 4.12, offensive odors resulting from autoclaving, steam sterilization, or laboratory animal activities at those facilities are localized and transient. The potential odors generated by the incinerators and the Building 190 Boiler Plant, as discussed in Section 4.12, will increase as a result of the increased loading of these facilities due to the proposed new USAMRIID facilities.

5.2.19.12 Transportation

The cumulative impacts to transportation from implementation of either Alternative I or Alternative II will be minor, including impacts from Fort Detrick future development. The increased traffic and parking demand anticipated for operation of the proposed new USAMRIID facilities noted in Section 5.2.13 will be in addition to similar increases associated with other approved projects for Area A of Fort Detrick that are currently under design or construction. Fort Detrick traffic is expected to constitute approximately 31% of the traffic loadings to the major arterials serving the Installation once the new USAMRIID facilities and other approved projects are operational. However, recent changes to the existing roadways and traffic patterns on Area A of Fort Detrick have improved traffic flow in the area. Additional parking lots for the NIBC are being planned. Ongoing traffic studies and ongoing discussions with USAG and local/state governments will identify infrastructural improvements to the Fort Detrick transportation network to reduce negative impacts on local traffic patterns (Sheffer, 2006c).

5.2.19.13 Energy Resources

Operation of the proposed new USAMRIID facilities will increase the demands for natural gas (for the CUP boilers and incinerators) and decrease the demands for No. 6 fuel oil consumption, as noted in Section 5.2.14. Because the new USAMRIID facilities will use the CUP (state-of-the-art, low pollution equipment) to supply steam requirements, it is expected that the increased natural gas consumption associated with the operation of the new USAMRIID facilities will result in decreased overall air emissions by Fort Detrick since the use of No. 6 fuel oil will decrease. All air pollutant emissions will be minimized by adherence to the respective permit limits and operational requirements to be determined for the CUP. A Conformity Analysis in accordance with the CAA has been prepared for implementation of either Alternative I or Alternative II (see Appendix J).

5.2.19.14 Pollution Prevention and Waste Management/Hazardous Materials Management

Implementation of either Alternative I or Alternative II will have minor cumulative impacts on pollution prevention and waste management at Fort Detrick, including impacts from Fort Detrick future development. As discussed in Section 2.3.3.2 and Section 2.3.3.3, the disposal of wastes generated from the proposed new USAMRIID facilities, other facilities on the NIBC, and other approved projects will increase the loading of the Fort Detrick municipal waste incinerators (Alternative I = 74%; Alternative II = 76%), medical waste incinerators (Alternative I = 32%; Alternative II = 33%) and the WWTP (Alternative I = 55%; Alternative II = 57%). These additional loadings are within the respective capacities of the waste disposal systems.

During construction/demolition/renovation of the proposed new USAMRIID facilities, all wastes will be managed in accordance with LEED guidelines. A performance requirement for 50 percent minimum diversion of construction and demolition waste by weight from landfill disposal will mitigate potential cumulative impacts (see Section 2.3.1.4). The new USAMRIID facilities will be designed to achieve LEED certification which will likely mitigate cumulative impacts on the Installation's waste management systems (see Section 5.2.15). Pollution prevention will be practiced through source reduction and conservation or by elimination of toxic materials during the operational phase by integration with the EMS objectives of the Installation as a whole.

5.2.19.15 Human and Health and Safety

The cumulative impacts to human health and safety resulting from implementation of either Alternative I or Alternative II will be negligible. Research activities planned for the proposed new USAMRIID facilities will be similar to those at the existing USAMRIID facilities and the NIAID IRF, currently under construction, and the DHS NBACC Facility, currently under design. USAMRIID has been operating for more than 30 years with negligible impact on the environment and human health (USAMRMC, 2004; USAMRMC, 2001). Its potential adverse impacts on human health and safety have been effectively mitigated by adherence to the BMBL engineering measures and safety practices (CDC/NIH, 1999) and environmental regulations discussed in Sections 2.3.3 and 2.3.4.

The cumulative risks to the public that would be posed by operation of the DHS NBACC Facility, the NIAID IRF, and the proposed new USAMRIID facilities, all in close proximity, were addressed in Appendix H. Each of these facilities, as an individual entity, previously has been shown to pose negligible risks to public health. Hazard assessments of the cumulative risks to the public for the three facilities concluded that the individual impacts were, at most, additive. That is, the total impact from all three facilities is not more than the sum of the (negligible) individual impacts, and therefore, negligible itself.

For example, potential simultaneous release of highly infectious biological agents from two (let alone three) separate BSL-3 or BSL-4 laboratories is not a credible event given the multiple engineering controls and procedural safeguards at each facility. Even in that highly unlikely event, the ground level concentrations of a hypothetical released biological agent would be negligible at all points outside the boundaries of Fort Detrick (see Appendix H, Section 7.A). The cumulative hazard analyses are similar for simultaneous escape of infected animals from two or three separate laboratories; simultaneous release of biological agents from shipments of infectious materials to or from two or three separate laboratories; release of a biological agent due to an external accident or disaster simultaneously affecting two or three laboratories; or inadvertent transmission of diseases via simultaneous public contact with workers from two or three separate laboratories.

5.2.19.16 Environmental Justice

The cumulative impacts of implementation of either Alternative I or Alternative II to environmental justice will be negligible, including impacts from Fort Detrick future development. The requirement that all vendors and contractors participating in the construction/demolition/renovation and operational phases of NIBC development must adhere to Equal Employment Opportunity and Affirmative Action considerations as identified in 29 CFR 1608 will ensure adverse cumulative impacts will not occur.

5.2.20 PUBLIC OPINION

Public involvement is an important part of the NEPA process and must be encouraged to the maximum extent practicable, in accordance with NEPA regulations [40 CFR 1500.6 and 1506.6(b)]. The diligent efforts of USAMRMC, USAMRIID's, and USAG to involve stakeholders and the public in the environmental review process for the proposed new USAMRIID facilities are summarized in Section 1.4.

5.3 COMPARISON OF THE ALTERNATIVES

Table 5-2 and Table 5-3 summarize the potential environmental impacts associated with the construction/demolition/renovation and operation, respectively, of the proposed new USAMRIID facilities. Mitigation measures that will be incorporated in the design of the project are noted in these tables. Table 5-4 provides details of the proposed mitigation measures.

5.3.1 ALTERNATIVE I AND ALTERNATIVE II

Alternative I (Construction and Operation of New USAMRIID Facilities and Decommissioning and Demolition of the Existing USAMRIID Facilities on Area A of Fort Detrick, Maryland) includes construction and operation of new USAMRIID facilities totaling approximately 1.1 million gsf. Alternative II (Construction and Operation of New USAMRIID Facilities and Decommissioning and Partial Demolition of the Existing USAMRIID Facilities and Re-use of the Remaining Facilities on Area A of Fort Detrick, Maryland) includes the construction and operation of the new facilities described in Alternative I but also includes retention and renovation of a portion of Building 1425. Unlike Alternative I, implementation of Alternative II also would accommodate the BRAC-stipulated creation of the Biodefense Center of Excellence at Fort Detrick and therefore is considered the preferred option.

As described in Section 4 and Section 5 of this EIS, the environmental impacts associated with Alternative I and Alternative II are quantitatively similar and qualitatively identical. These impacts are summarized below:

Potential impacts associated with construction include:

- minor impacts to land use (see Section 4.1.5 and Section 5.2.1);
- no impacts to the local climate (see Section 4.2 and Section 5.2.2);
- minor impacts to geology (see Section 4.3 and Section 5.2.3);
- minor impacts to soils (see Section 4.4 and Section 5.2.4);
- minor impacts to water resources (see Section 4.5 and 5.2.5);
- negligible impacts to wetlands and floodplains (see Section 4.6 and Section 5.2.6);
- negligible impacts to plants and animals (see Section 4.7 and Section 5.2.7);
- minor impacts to air quality (see Section 4.8 and Section 5.2.8);
- significant impacts to historical resources and negligible impacts to cultural resources (see Section 4.9 and Section 5.2.9);
- minor positive impacts to the local socioeconomic environment (see Section 4.10 and Section 5.2.10);
- minor impacts from noise, negligible impacts from lighting (see Section 4.11 and Section 5.2.11);
- minor impacts from odors (see Section 4.12 and Section 5.2.12);
- minor impacts to traffic (see Section 4.13 and 5.2.13);
- negligible impacts to energy resources (see Section 4.14 and 5.2.14);
- minor impacts to waste streams (see Section 4.15 and Section 5.2.15);
- minor impacts to hazardous materials management (see Section 4.16 and Section 5.2.16);
- negligible to minor impacts to human health and safety (see Section 5.2.17);
- negligible to minor impacts to environmental justice (see Section 5.2.18); and
- minor cumulative impacts (see Section 5.2.19).

Potential impacts associated with operation include:

- minor positive impacts to land use (see Section 4.1.5 and Section 5.2.1);
- no impacts to the local climate (see Section 4.2 and Section 5.2.2);
- negligible impacts to geology (see Section 4.3 and Section 5.2.3);
- negligible impacts to soils (see Section 4.4 and Section 5.2.4);
- minor impacts to water resources (see Section 4.5 and 5.2.5);
- negligible impacts to wetlands and floodplains (see Section 4.6 and Section 5.2.6);
- negligible impacts to plants and animals (see Section 4.7 and Section 5.2.7);
- minor impacts to air quality (see Section 4.8 and Section 5.2.8);
- negligible impacts to historical and cultural resources (see Section 4.9 and Section 5.2.9);
- minor positive impacts to the local socioeconomic environment (see Section 4.10 and Section 5.2.10);
- minor impacts from noise and lighting (see Section 4.11 and Section 5.2.11);
- minor impacts from odors (see Section 4.12 and Section 5.2.12);
- minor impacts to traffic (see Section 4.13 and 5.2.13);
- minor impacts to energy resources (see Section 4.14 and 5.2.14);
- minor impacts to waste streams (see Section 4.15 and Section 5.2.15);
- minor impacts to hazardous materials management (see Section 4.16 and Section 5.2.16);
- negligible impacts to human health and safety (see Section 5.2.17);
- negligible impacts to environmental justice (see Section 5.2.18); and
- minor cumulative impacts (see Section 5.2.19).

Mitigation for the potential adverse impacts will include compliance with permit limits, regulatory requirements, and adherence to BMBL and other standards for operational practices (see Table 5-4). Minor water resources impacts and limitations of the existing water distribution system could be mitigated by establishing an alternate water source, upgrading of the water distribution system, or through water conservation measures. These impacts will be minor for implementation of either Alternative I or Alternative II because of the limited increase in water supply requirements for the proposed new USAMRIID facilities.

A Mitigation Monitoring Plan will be developed to ensure the mitigations identified in Table 5-4 are completed.

5.3.2 ALTERNATIVE III – NO ACTION

Under Alternative III, the proposed new USAMRIID facilities would not be constructed and operated, the environmental impacts associated with implementation of either Alternative I or Alternative II, as discussed above, would not occur.

Analyses of the environmental consequences of “no action” are required under CEQ regulations [40 CFR 1502.14(d)]. This ensures that changes in the baseline conditions not associated with implementation of either Alternative I or Alternative II, as discussed under Cumulative Impacts in Section 5.2.19, are duly considered. Potential changes to the environmental baseline conditions are discussed above.

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Table 5-2. Summary of Potential Environmental Impacts from Construction/Demolition/Renovation of the Proposed New USAMRIID Facilities.

Environmental Attribute	Potential Environmental Impacts
	Alternative I or Alternative II
Land Use	Minor impacts from land disturbance, mitigated by adherence to COMAR 15% afforestation requirements
Climate	No impacts to climate.
Geology	Minor potential for sinkhole formation, mitigated by good structural design practices. Mitigation of potential adverse impacts to topography and stormwater runoff patterns through use of BMPs.
Soils	Temporary, minor soil erosion in areas where ground cover is removed, mitigated through use of BMPs.
Water Resources	Minor sedimentation in surface waters, mitigated through use of BMPs. Increased stormwater runoff due to impervious surfaces, mitigated by upgrading of stormwater management facilities. Minor impacts to groundwater, mitigated by compliance with groundwater protection requirements.
Wetlands and Floodplains	Negligible impacts to wetlands and floodplains.
Plant and Animal Ecology	No critical habitats will be adversely impacted; it is not likely that there will be impacts to special-status species. Negligible impacts to plant and animal species, mitigated by BMPs. Positive impacts to local plant and animal ecology due to COMAR 15% afforestation requirements.
Air Quality	Temporary, localized minor generation of fugitive dust, mitigated through the use of BMPs. Negligible increase of vehicular emissions.
Historic and Cultural Resources	Significant impacts to NRHP-eligible historic sites. Buildings 1412, 1414, and 1415 will be demolished.
Socioeconomic Environment	Minor positive economic impact to the economy of Frederick.
Noise and Lighting	Temporary localized minor noise expected. Negligible adverse impacts on worker hearing mitigated by OSHA compliance; impacts on the public mitigated by adherence to COMAR and City of Frederick noise control regulations. Negligible impacts from lighting.
Odors	Transient, localized minor incidence of objectionable odors expected.
Transportation	Minor temporary increased traffic and congestion in the immediate vicinity of construction/demolition/renovation. Workers may be bused from Area B.
Energy Resources	Negligible impacts to depletable energy resources.
Pollution Prevention and Waste Management	Temporary minor impact on the waste management system of Fort Detrick. Contractors will be responsible for disposal of construction, demolition, and renovation waste off-site.
Hazardous Material Management	Minor impacts expected. USAG oversight of hazardous material handling will insure compliance with OSHA and RCRA regulations.
Human Health and Safety	Potential minor impacts to construction workers mitigated by compliance with OSHA regulations. Negligible to minor impact to the public due to accidents resulting from increased heavy truck traffic.
Environmental Justice	Negligible impacts to minority and/or low-income communities due to the fact that all vendors and contractors must adhere to Equal Employment Opportunity and Affirmative Action contract requirements.
Cumulative Impacts	The cumulative impacts will be minor and mitigable.

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Table 5-3. Summary of Potential Environmental Impacts from Operation of the Proposed New USAMRIID Facilities.

Environmental Attribute	Potential Environmental Impacts
	Alternative I or Alternative II
Land Use	Site is consistent with Fort Detrick IMP for land use. Minor positive impacts due to the fact that the new USAMRIID facilities will be attractive, landscaped buildings that will complement future Installation development.
Climate	No impacts to climate.
Geology	Negligible impacts associated with groundwater contamination, mitigated by engineering controls and adherence to SOPs.
Soils	Negligible soil erosion, mitigated by stormwater management requirements as determined by MDE.
Water Resources	Minor impact on Monocacy River water supply source; Water supply limitations for the proposed new USAMRIID facilities during drought; Groundwater contamination mitigated by adherence to construction standards and operational practices for containment of wastewater leakage (e.g., secondary containment). Minor impacts to local groundwater recharge resulting from increased impervious surface area. Minor impacts from increased stormwater runoff due to impervious surfaces, mitigated by upgrading of stormwater management facilities.
Wetlands and Floodplains	Negligible impacts to wetlands and floodplains.
Plant and Animal Ecology	It is not likely that there will be impacts on special-status species. Negligible disruption of habitat for resident plant and animal species; minimal displacement of deer and some bird species anticipated.
Air Quality	Minor pollutant emissions due to increased use of boilers and incinerators, mitigated by adherence to air permit requirements. Reduced air emissions from the Building 190 Boiler Plant due to the fact that the new USAMRIID facilities will use the CUP to supply steam requirements. Negligible increase of vehicular emissions due to increased traffic.
Historic and Cultural Resources	Negligible impacts to the NRHP-listed buildings and archeological sites on the Installation.
Socioeconomic Environment	Minor positive impacts on local economies. No significant adverse effect on the property values of adjoining residences is anticipated.
Noise and Lighting	Noise impacts from normal operations expected to be temporary, localized, and minor. Noise impacts from emergency generators mitigated by use of a sound buffering structure and restrictions on scheduled testing. Minor impacts from lighting.
Odors	Transient, localized minor incidence of objectionable odors from autoclaving, steam sterilization and laboratory animal operations at the proposed new USAMRIID facilities. Potential minor increased incidence of petroleum odors from boiler plant or incinerator operations.
Transportation	Minor increases of traffic loading on the Installation and adjacent areas. Minor increased demand for parking, mitigated by dedicated parking facility.

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Table 5-3. Summary of Potential Environmental Impacts from Operation of the Proposed New USAMRIID Facilities (continued).

Environmental Attribute	Potential Environmental Impacts
	Alternative I or Alternative II
Energy Resources	Minor increases in consumption of natural gas, electrical power, and steam and resultant increased utility requirements.
Pollution Prevention and Waste Management	Minor increases in quantities of wastewater, special medical waste, general solid waste, hazardous waste, and radiological waste, mitigated by source reduction. Releases of toxic or hazardous materials to the environment mitigated by compliance with permit requirements.
Hazardous Material Management	Minor impacts expected. USAG oversight of hazardous material handling will insure compliance with OSHA and RCRA regulations.
Human Health and Safety	Negligible impacts to worker health and safety, mitigated by adherence to safety standards (e.g., BMBL). Negligible impacts to public health and safety from laboratory operations and associated shipment of etiologic agents. Significant positive impacts to public health and safety due to the planned research activities.
Environmental Justice	Negligible impacts to minority or low-income populations.
Cumulative Impacts	Negligible cumulative impacts on human health and safety for operation of the NBACC Facility, NIAID, and proposed new USAMRIID facilities; mitigated by adherence to BMBL engineering measures and safety practices. Minor adverse cumulative impacts on traffic and parking demand by the proposed new USAMRIID facilities; mitigated by Installation roadway improvements and central NIBC parking lot. Minor limitations on the required water supply due to drought conditions in the Monocacy River, mitigated by water conservation measures and development of additional water supply sources. Minor cumulative impacts to stormwater management, mitigated by implementation of new regional stormwater management plan. Minor cumulative impacts of increased baseline noise levels, mitigated by scheduling of emergency generator testing. Increased natural gas consumption will not result in increased overall air emissions by Fort Detrick due to the fact that the new USAMRIID facilities will use the CUP to supply steam requirements.

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Table 5-4. Summary of Mitigation Measures and Mechanisms.

Environmental Attribute	Impact	Mitigation Measure	Mechanism
Land Use	Land disturbance	15% afforestation requirement	USAMRMC financial responsibility. USAG selection of forestation site and oversight of compliance.
Geology	Potential for sinkhole formation	Good structural design practices and use of BMPs during construction/demolition/renovation	USAMRMC construction contract terms and construction management
	Potential pathways for groundwater contamination	Engineering controls and adherence to SOPs	USAMRMC and USAG oversight during operation
	Potential adverse impacts to topography and stormwater runoff patterns	Use of BMPs during construction/demolition/renovation	USAMRMC construction contract terms and construction management
Soils	Soil erosion during construction/demolition/renovation	Use of BMPs during construction/demolition/renovation	USAMRMC construction contract terms and construction management
		Adherence to MDE stormwater management requirements	USAG Stormwater Management Plan and NPDES Permit Compliance
Water Resources	Sedimentation to surface waters	Use of BMPs during construction/demolition/renovation	USAMRMC construction contract terms and construction management
		Adherence to MDE stormwater management requirements	USAG Stormwater Management Plan and NPDES Permit Compliance
	Increased stormwater runoff due to impervious surfaces	Adherence to MDE stormwater management requirements	USAG Stormwater Management Plan and NPDES Permit Compliance
	Damage to aquifer during construction/demolition/renovation	Good construction/demolition/renovation practices	USAMRMC construction contract terms and construction management
	Potential groundwater contamination during operation	Secondary containment for potential wastewater leakage and for ASTs/USTs	USAMRMC design standards, construction contract terms and construction management
Plant and Animal Ecology	Adverse impacts to plant and animal species	Use of BMPs during construction/demolition/renovation	USAMRMC construction contract terms and construction management
	Potential development of forested land	Forestation requirements	USAMRMC financial responsibility. USAG selection of forestation site and oversight of compliance.

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Table 5-4. Summary of Mitigation Measures and Mechanisms (continued).

Environmental Attribute	Impact	Mitigation Measure	Mechanism
Air Quality	Fugitive dust	Use of BMPs during construction/demolition/renovation	USAMRMC construction contract terms
	Pollutant emissions due to increased use of boilers and incinerators and emergency generator	Adherence to air permit requirements	USAG permit compliance
Historic and Cultural Resources	Demolition of NRHP-eligible historic sites	Recordation process	USAG compliance with DA regulations and SHPO requirements
	Damage other to historic and cultural resources	Use of BMPs during construction/demolition/renovation and adherence to Maryland SHPO requirements	USAMRMC construction contract terms and USAG compliance with DA regulations and SHPO requirements
Noise	Noise effects on construction worker hearing	OSHA compliance	USAMRMC construction contract terms
	Impacts on public health during construction/demolition/renovation	Adherence to noise control regulations	USAMRMC construction contract terms
	Emergency generator noise	Noise control enclosure, restrictions on scheduled testing	USAMRMC and USAG compliance with schedule
Transportation	Increased traffic	Potential and ongoing infrastructural improvements	Ongoing discussions between USAG and the City of Frederick and Frederick County
	Construction worker parking	Contract requirements	USAMRMC construction contract terms
	Proposed new USAMRIID facilities worker parking	Dedicated parking facility	USAMRMC construction contract management
Pollution Prevention and Waste Management	Construction wastes	Contract requirements for disposal of all wastes outside Fort Detrick and in accordance with regulatory requirements	USAMRMC construction contract terms
	Wastes generated by proposed new USAMRIID facilities operations	Pollution prevention through source reduction and conservation	USAG and USAMRMC compliance with USAG, CDC, and DA requirements
Human Health and Safety	Potential construction/demolition/renovation-related injury	Compliance with OSHA regulations	USAMRMC construction contract terms
	Proposed new USAMRIID facilities worker health and safety	Adherence to BMBL and OSHA safety standards	USAMRMC compliance with CDC/NIH requirements and OSHA/USAG standards

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6.0 CONCLUSIONS

The Proposed Action and subject of this EIS is the Construction and Operation of New USAMRIID Facilities and Decommissioning and Demolition and/or Re-use of Existing USAMRIID Facilities at Fort Detrick, Maryland. The construction will occur in two stages. Stage 1 will provide approximately 700,000 gsf of new building space for the replacement of outdated and compressed existing USAMRIID facilities in order to sustain the current mission and to expand medical T&E capacity in support of immediate DoD and national demand. Stage 2 will encompass approximately 400,000 gsf of new building space for the balance of USAMRIID's expanded mission and for additional capacity to meet intensified national requirements for medical T&E in support of biodefense research as well as to accommodate increased collaborative efforts among USAMRIID's mission partners. In addition, approximately 200,000 gsf of the existing USAMRIID facilities may be renovated and re-used for laboratory or non-laboratory use, to be determined by evolving biodefense requirements.

The 2005 BRAC-stipulated creation of the Biodefense Center of Excellence at Fort Detrick may include relocation of 120 - 140 personnel currently assigned to medical biodefense research functions at the Walter Reed Army Institute of Research and the Naval Medical Research Center to the planned new Joint Medical Biological Defense Research Center of Excellence at Fort Detrick. Some of the laboratory functions required by the BRAC mission may be accommodated within the existing USAMRIID facilities after phased occupancy of Stage 1 by USAMRIID. The renovated space will provide flexibility for contingencies such as an extended delay of the Stage 2 construction or accommodation of organizations reassigned to Fort Detrick as a result of future BRAC Commission decisions.

Three reasonable alternatives have been identified and were evaluated in this EIS. These include: Construction and Operation of New USAMRIID Facilities and Decommissioning and Demolition of the Existing USAMRIID Facilities on Area A of Fort Detrick, Maryland (Alternative I), Construction and Operation of New USAMRIID Facilities and Decommissioning and Partial Demolition of the Existing USAMRIID Facilities and Re-use of the Remaining Facilities on Area A of Fort Detrick, Maryland (Alternative II), and the No Action Alternative (Alternative III). Environmental impacts of these alternatives were evaluated in detail and found to be mostly minor and mitigable.

As discussed below, either Alternative I or Alternative II will meet the needs of USAMRIID's mission requirements. Unlike Alternative I, implementation of Alternative II also would accommodate the BRAC-stipulated creation of the Biodefense Center of Excellence at Fort Detrick. Under Alternative III, the No Action Alternative, the proposed new USAMRIID facilities would not be constructed and operated. This would eliminate the mostly minor environmental impacts associated with Alternative I and Alternative II, but it would not allow USAMRIID to meet its mission requirements.

Although options to locate the new USAMRIID facilities on an alternate site at Fort Detrick (Alternative IV) were also considered early on during the development of the EIS, this is not consistent with Fort Detrick land use planning. Moreover, in comparison to the selected action it would be more distant from the existing USAMRIID facilities and the NIAID IRF, now under construction, and the DHS NBACC Facility, now under design, and therefore, less favorable for utilization of existing infrastructure and for synergy among personnel of the three agencies. Locating the new USAMRIID facilities on a site outside of Fort Detrick (Alternative V), was eliminated from detailed evaluation in the EIS during the scoping process. It would be contrary

to congressional intent for the laboratory to be built outside Fort Detrick. Furthermore, it may require costly land acquisition and infrastructure development that could delay completion of the new USAMRIID facilities by several years.

During the construction/demolition/renovation phases, the following impacts are anticipated: minor impacts to land use, no impacts to the local climate, minor impacts to geology, minor impacts to soils, minor impacts to water resources, negligible impacts to wetlands and floodplains, negligible impacts to plants and animals, minor impacts to air quality, significant impacts to historical resources and negligible impacts to cultural resources, minor positive impacts to the local socioeconomic environment, minor impacts from noise, negligible impacts from lighting, minor impacts from odors, minor impacts to traffic, negligible impacts to energy resources, minor impacts to waste streams, minor impacts to hazardous materials management, negligible to minor impacts to human health and safety, negligible to minor impacts to environmental justice and minor cumulative impacts.

During the operational phase, significant positive impacts to public health and safety are anticipated from USAMRIID accomplishing its mission. Additional expected impacts include: minor positive impacts to land use, no impacts to the local climate, negligible impacts to geology, negligible impacts to soils, minor impacts to water resources, negligible impacts to wetlands and floodplains, negligible impacts to plants and animals, minor impacts to air quality, negligible impacts to historical and cultural resources, minor positive impacts to the local socioeconomic environment, minor impacts from noise and lighting, minor impacts from odors, minor impacts to traffic, minor impacts to energy resources, minor impacts to waste streams, minor impacts to hazardous materials management, negligible impacts to human health and safety, negligible impacts to environmental justice, and minor cumulative impacts.

In addition, possible adverse health and safety impacts on laboratory workers in the proposed new USAMRIID facilities and on nearby residents during the operational phase of the project were identified and evaluated. The risks were deemed to be negligible, and mitigable through adherence to BMBL and other standards for safe operational practices.

The principal conclusions of this EIS are: (1) Implementation of either Alternative I (Construction and Operation of New USAMRIID Facilities and Decommissioning and Demolition of the Existing USAMRIID Facilities on Area A of Fort Detrick, Maryland) or Alternative II (Construction and Operation of New USAMRIID Facilities and Decommissioning and Partial Demolition of the Existing USAMRIID Facilities and Re-use of the Remaining Facilities on Area A of Fort Detrick, Maryland) will result in mostly minor environmental impacts, including cumulative impacts. Significant adverse impacts are anticipated to historical resources from implementation of either Alternative I or Alternative II. (2) Implementation of either Alternative I or Alternative II will allow USAMRIID to meet current and future mission requirements, and will be a crucial step in addressing a national shortage of such facilities. (3) Only Alternative II will accommodate the BRAC-stipulated relocations of medical biodefense research functions at the Walter Reed Army Institute of Research and the Naval Medical Research Center to Fort Detrick. Alternative II is considered the preferred option. (4) Implementation of Alternative III (No Action) would eliminate the mostly minor environmental impacts associated with the Proposed Action, but it would not address the needs of USAMRIID to replace its outdated and compressed facilities to meet current mission requirements and to expand medical T&E capacity in support of immediate DoD and national demand for such facilities.

7.0 REFERENCES

Ackerman, C. 2005. E-mail correspondence from C. Ackerman (MAJ, USAMRIID) to A. Comrov (BSA Environmental Services, Inc.) on 16 November 2005.

Adkins, J. 2005. E-mail correspondence from J. Adkins (Analytical Services, Inc., Environmental Scientist, Safety, Environment, and Integrated Planning Office [SEIPO]) to A. Comrov (BSA Environmental Services, Inc.) on 14 December 2005.

Advisory Council on Historic Preservation. 2005. *About ACHP: General Information*. Information obtained from http://www.achp.gov/aboutachp.html on 2 December 2005.

Alliance for the Chesapeake Bay, Inc. 2006. *Monocacy River Fact Sheet.* Monocacy River information obtained from http://www.acb-online.org/pubs.cfm on 15 May 2006.

Ansell, C. 2006a. E-mail correspondence from MAJ C. Ansell (MAJ, USAMRIID, Chief of Safety) to A. Comrov on 5 April 2006.

Ansell, C. 2006b. E-mail correspondence from MAJ C. Ansell (MAJ, USAMRIID) to A. Comrov on 13 April 2006.

Bennett, J. 2005. E-mail distributed by J. Bennett (USAG, Master Planner, Integrated Planning Office) to R. Giesser (BSA Environmental Services, Inc.) and others on 14 December 2005.

Boyland, B. 2006a. E-mail correspondence from B. Boyland (USAG, Natural Resources Coordinator, SEIPO) to A. Comrov (BSA Environmental Services, Inc.) on 11 April 2006.

Boyland, B. 2006b. E-mail correspondence from B. Boyland (USAG, Natural Resources Coordinator, SEIPO) to A. Comrov (BSA Environmental Services, Inc.) on 22 May 2006.

Boyland, B. 2005a. E-mail correspondence from B. Boyland (USAG, Natural Resources Coordinator, SEIPO) to J. Beaver (BSA Environmental Services, Inc.) on 27 July 2005.

Boyland, B. 2005b. E-mail correspondence from B. Boyland (USAG, Natural Resources Coordinator, SEIPO) to A. Comrov (BSA Environmental Services, Inc.) on 19 July 2005.

Boyland, B. 2005c. E-mail correspondence from B. Boyland (USAG, Natural Resources Coordinator, SEIPO) to A. Comrov (BSA Environmental Services, Inc.) on 9 August 2005.

Boyland, B. 2005d. E-mail correspondence from B. Boyland (USAG, Natural Resources Coordinator, SEIPO) to A. Comrov (BSA Environmental Services, Inc.) on 15 December 2005.

Brezinski, D.K. 2004*. Stratigraphy of the Frederick Valley and its Relationship to Karst Development*. Maryland Department of Natural Resources, Maryland Geological Survey.

Brinjac, Kambic, and Associates. 1989. Odor Problem Study for Fort Detrick, Frederick, Maryland.

Business Wire. 2005. Information regarding Frederick County economics obtained from http://www.businesswire.com on 2 May 2005.

Business Wire. 2004. Information regarding Frederick County economics obtained from http://www.businesswire.com on 21 April 2004.

Carr, K., Henchal, E. A., Wilhelmsen, C., and Carr, B. 2004. Implementation of Biosurety Systems in a Department of Defense Medical Research Laboratory. *Biosecur Bioterror* 2(1): 7–16.

Centers for Disease Control and Prevention and National Institutes of Health. 1999. DHHS Publication No. 93-8395. *Biosafety in Microbiological and Biomedical Laboratories*. Fourth Edition. May 1999.

City of Frederick. 2005. *Annual Water Quality Report 2004 Summary.* Information obtained from http://www.cityoffrederick.com/PublicInfo/OtherInfo/2004WaterQualityReport/index.html on 14 December 2005.

City of Frederick. 2004. C*ity of Frederick Comprehensive Plan.* 16 September 2004.

City of Frederick Planning Department. 2002. *The City of Frederick Growth and Development Report 2002.* City of Frederick Planning Department, Frederick, Maryland.

Cole, L. 2006. E-mail correspondence from L. Cole (USAG, RCI Project Manager, Housing Office) to A. Comrov (BSA Environmental Services, Inc.) on 22 May 2006.

Covert, N.M. 2000. *Cutting Edge: A History of Fort Detrick, Maryland.* Prepared by the Public Affairs Office, Fort Detrick, Maryland. Fourth Edition.

Cox, C.S., Gagen, S.J., Baxter, J. 1974. Aerosol survival of *Serratia marcescens* as a function of oxygen concentration, relative humidity, and time. *Can J Microbiol*. 20(11):1529-34.

CPP, INC. 2006. Air Quality Assessment for the Fort Detrick NBACC Building.

Craig, R. 2006a. Information obtained from R. Craig (USAG, Chief, Environmental Management Office; SEIPO) via e-mail correspondence from R. Sheffer (USAG, Environmental Engineer, SEIPO) to distribution list on 7 April 2006.

Craig, R. 2006b. E-mail correspondence from R. Craig (USAG, Chief, Environmental Management Office; SEIPO) to J. Beaver (BSA Environmental Services, Inc.) on 30 March 2006.

Davis, J. 2006. E-mail correspondence from J. Davis (Summer Consultants, Inc.) to R. Prober (BSA Environmental Services, Inc.) on 30 March 2006.

Defense Environmental Network and Information Exchange. 2005. Information regarding the role of the Fort Detrick EMS obtained from https://www.denix.osd.mil/denix/Public/Library/EMS/emswhat.html on 30 December 2005.

Defense Threat Reduction Agency (DTRA). 2002. Hazard Prediction and Assessment Capability (HPAC), User Guide, Version 4.0.1.

Department of the Army. 2006. DA. Office of the Assistant Chief of Staff for Installation Management. *Requirements for Sustainable Management of Waste in Military Construction, Renovation and Demolition Activities*. 13 January 2006.

Department of the Army. 1991. *Installation Environmental Assessment*. February 1991.

Department of the Army. 1977. *Installation Assessment of Fort Detrick, Maryland, Record Evaluation Report No. 106, Volume I*. Department of the Army, Office of the Project Manager for Chemical Demilitarization and Installation Restoration, Aberdeen Proving Ground, Maryland.

Department of the Army, Directorate of Installation Services. 2001. *Master Plan, Basic Information Maps, General Site Map*. Department of the Army Installation Number 24225. 2 October 2001.

Department of Homeland Security and U.S. Army Garrison. 2004a. *Final Environmental Impact Statement, Construction and Operation of the National Biodefense Analysis and Countermeasures Center Facility by the Department of Homeland Security at Fort Detrick,*

Maryland. 23 December 2004. Department of Homeland Security and U.S. Army Garrison, Fort Detrick, Maryland.

Department of Homeland Security and U.S. Army Garrison. 2004b. *Final Environmental Baseline Survey, Southern Portion of the National Interagency Biodefense Campus on Area A at Fort Detrick, Maryland*. 2 April 2004. U.S. Army Garrison, Fort Detrick, Maryland.

Dimarco, R. 2002. Telephone communication between R. Dimarco (USAG, Chief of Engineering and Construction, Directorate of Installation Services) and J. Hickey (BSA Environmental Services, Inc.) on 16 August 2002.

Directorate of Installation Services. 2005a. *Fort Detrick Wastewater Treatment Plant Biomonitoring Evaluation (State Discharge Permit Application No. 03-DP-2527), First Quarterly Report for the Period January 1, 2005 to March 31, 2005*. 3 March 2005.

Directorate of Installation Services. 2005b. *Fort Detrick Wastewater Treatment Plant Toxic Chemical Testing Evaluation (State Discharge Permit Application No. 03-DP-2527), First Quarterly Report for the Period January 1, 2005 to March 31, 2005*. 17 March 2005.

Directorate of Installation Services. 2005c. *Fort Detrick Wastewater Treatment Plant Biomonitoring Evaluation (State Discharge Permit Application No. 03-DP-2527), Second Quarterly Report for the Period April 1, 2005 to June 30, 2005*. 13 May 2005.

Directorate of Installation Services. 2005d. *Fort Detrick Wastewater Treatment Plant Biomonitoring Evaluation (State Discharge Permit Application No. 03-DP-2527), Third Quarterly Report for the Period July 1, 2005 to September 30, 2005*. 15 August 2005.

Dressler, M. 2006a. E-mail correspondence from M. Dressler (USAG, Chief, Waste Management, Directorate of Installation Services) to A. Comrov (BSA Environmental Services, Inc.) on 4 January 2006.

Dressler, M. 2006b. E-mail correspondence from M. Dressler (USAG, Chief, Waste Management, Directorate of Installation Services) to A. Comrov (BSA Environmental Services, Inc.) on 27 March 2006.

Dressler, M. 2005a. E-mail correspondence from M. Dressler (USAG, Chief, Waste Management, Directorate of Installation Services) to A. Comrov (BSA Environmental Services, Inc.) on 14 November 2005.

Dressler, M. 2005b. E-mail correspondence from M. Dressler (USAG, Chief, Waste Management, Directorate of Installation Services) to A. Comrov (BSA Environmental Services, Inc.) on 26 July 2005.

Dressler, M. 2005c. E-mail correspondence from M. Dressler (USAG, Chief, Waste Management, Directorate of Installation Services) to D. Pearce (BSA Environmental Services, Inc.), distributed by R. Sheffer (USAG, Environmental Engineer, SEIPO) on 16 June 2005.

Esteban, J. 2006. E-mail correspondence from J. Esteban (USAMRIID, Radiation Security Officer) to A. Comrov (BSA Environmental Services, Inc.) on 17 April 2006.

Federline, D. 2006. E-mail correspondence from D. Federline (USAG, Integrated Planning Office, Real Property Specialist, Real Property Office) to A. Comrov (BSA Environmental Services, Inc.) on 28 April 2006.

Frederick County. 2005. TransIT Services of Frederick County. 2005. *Route 30 – The Frederick Towne Mall Connector.* Information obtained from http://www.co.frederick.md.us/Transit/30_Aug2005.pdf on 13 December 2005.

Frederick County. 2004. State of Maryland Scenic Byway Program. *Corridor Management Plan for the US 15 Catoctin Mountain Scenic Byway.* April 2004.

Frederick County Department of Planning and Zoning. 2002. *Frederick Region Plan.* Planning Information obtained from http://www.co.frederick.md.us/planning/CompPlan/Frederick/FRPlanText.htm on 6 December 2005.

Frederick County Department of Planning and Zoning. 1998. *Frederick County Comprehensive Plan.* Planning Information obtained from http://www.co.frederick.md.us/planning/CompPlan/CountyPlanText.htm on 6 December 2005.

Frederick County Division of Planning. 2006. Frederick County Division of Planning statistics found at http://www.co.frederick.md.us/planning/Demographics/PopProj.htm on 2 February 2006.

Frederick County Division of Planning. 2004. *Frederick County Demographic and Development Data*. March 2004. Frederick County Division of Planning, Frederick County, Maryland.

Frederick County, Maryland *Ad Hoc* Local Emergency Planning Committee. 2002. *Response to Chemical, Biological, Radiological, Nuclear or Explosive (CBRNE) Terrorist Acts: Concept of Operations.* July 2002.

Frederick News-Post. 2005a. “Water, Water Everywhere?” 27 December 2005.

Frederick News-Post. 2005b. “Growing Strong: Frederick County Still Experiencing Population Boom.” 3 May 2005.

Frederick News-Post. 2004. “Battle Ready: Army Post’s New Special Operations Vehicle is Equipped for Response to Terror Attacks.” 15 December 2004.

Gazette, The. 2002. *Frederick County: The Issue was Water*. S. Greenfield. 27 December 2002.

General Physics. 2004. *Fort Detrick Area A Stormwater Assessment*. Final. Prepared for the U.S. Army Garrison. June 2004.

Goodwin and Associates, Inc. 2002. *Historic Military Quarters Handbook – Architectural Styles* obtained from http://www.denix.usd.mil/denix/Public/ES-Programs/Conservation/Quarters/four.html.

Goodwin and Associates, Inc. 1993. *Phase I Archeological Survey of Fort Detrick.* Prepared for the U.S. Army Corps of Engineers. August 1993.

Gortva, J. 2006. E-mail correspondence from J. Gortva (USAG, SEIPO) to A. Comrov (BSA Environmental Services, Inc.) on 23 May 2006.

Gortva, J. 2005a. E-mail correspondence from J. Gortva (USAG, SEIPO) to A. Comrov (BSA Environmental Services, Inc.) on 21 September 2005.

Gortva, J. 2005b. E-mail correspondence from J. Gortva (USAG, Safety, Environment and Integrated Planning Office) to A. Comrov (BSA Environmental Services, Inc.) on 13 December 2005.

Grams, D. 2006. E-mail correspondence from D. Grams (USAG, Water/Wastewater Supervisor, DIS) to A. Comrov (BSA Environmental Services, Inc.) on 13 April 2006.

Hagood, S. 2005. “Genetic Variation and Mortality of Central Maryland Eastern Box Turtles (*Terrapene c. carolina*).” Doctoral Research Proposal.

Harding, A.L. and Byers, K.B. 2000. Epidemiology of laboratory-associated infections. In: Fleming, D.O. and Hunt, D.L. eds. *Biological Safety: Principles and Practices*, 3rd ed. Washington, DC, ASM Press.

Hawley, R. 2002. Memorandum from R. Hawley (Chief, SRPO, USAMRIID) regarding laboratory-acquired illness during 2002.

Hawley, R. 2000. Letter from R. Hawley (Chief, SRPO, USAMRIID) to J. Beaver (BSA Environmental Services, Inc.).

Hawley, R., and P. McKinney. 2000. USAMRIID Safety Policy Regarding Illness Reporting by Employees, 13 May.

Herald-Mail (Hagerstown, MD). 2005. "Smoke Released into Air from Fort's Boiler Plant." 7 May 2005.

Hudlow, D. 2005. E-mail correspondence from D. Hudlow (USAG, Radiation Protection Officer, Installation Safety Management Office) to A. Comrov (BSA Environmental Services, Inc.) on 14 November 2005.

Hug, B. 2005a. E-mail correspondence from B. Hug (Division Chief, MDE ARMA Air Quality Policy and Planning Division) to A. Comrov (BSA Environmental Services, Inc.) on 21 July 2005.

Hug, B. 2005b. E-mail correspondence from B. Hug (Division Chief, MDE ARMA Air Quality Policy and Planning Division) to A. Comrov (BSA Environmental Services, Inc.) on 11 July 2005.

John Gallup and Associates. 2006. *NIBC Master Plan 90 Percent Submittal.*

Johnson, K.M. 2003. *Biosafety at BSL4: More than 20 Years' Experience at Three Major Facilities*. Appendix D of National Institutes of Health. FEIS, Rocky Mountain Laboratories Integrated Research Facility, Hamilton, Montana. April 2004.

Ko, G., First, M.W., Burge, H.A. 2000. Influence of relative humidity on particle size and UV sensitivity of *Serratia marcescens* and *Mycobacterium bovis* BCG aerosols. *Tuber Lung Dis*. 80(4-5):217-28.

Koning, R.C. 2004. E-mail correspondence from R. C. Koning (USAMRIID) to D. Federline (USAG, Integrated Planning Office, Real Property Specialist, Real Property Office) on 22 July 2004.

Kramer, A. 2005. E-mail correspondence from A. Kramer (USAG, Environmental Management Office) to A. Comrov (BSA Environmental Services, Inc.) on 27 July 2005.

Lambert, C. 2005. E-mail correspondence from C. Lambert (City of Frederick, Superintendent of Water Treatment) to A. Comrov (BSA Environmental Services, Inc.) on 1 December 2005.

Leadore, R. 2005. E-mail correspondence from R. Leadore (USAG, Manager, Hazardous Material Management Office) to A. Comrov (BSA Environmental Services, Inc.) on 18 November 2005.

Lewis, M. 2006a. E-mail correspondence from M. Lewis (Analytical Services, Inc., SEIPO) to A. Comrov (BSA Environmental Services, Inc.) on 8 May 2006.

Lewis, M. 2006b. E-mail correspondence from M. Lewis (Analytical Services, Inc., SEIPO) to A. Comrov (BSA Environmental Services, Inc.) on 22 May 2006.

Lewis, M. 2006c. E-mail correspondence from M. Lewis (Analytical Services, Inc., SEIPO) to A. Comrov (BSA Environmental Services, Inc.) on 22 March 2006.

Lewis, M. 2006d. E-mail correspondence from M. Lewis (Analytical Services, Inc., SEIPO) to A. Comrov (BSA Environmental Services, Inc.) on 3 April 2006.

Lewis, M. 2006e. E-mail correspondence from M. Lewis (Analytical Services, Inc., SEIPO) to A. Comrov (BSA Environmental Services, Inc.) on 4 April 2006.

Lewis, M. 2006f. E-mail correspondence from M. Lewis (Analytical Services, Inc., SEIPO) to A. Comrov (BSA Environmental Services, Inc.) on 20 March 2006.

Lewis, M. 2005a. E-mail correspondence from M. Lewis (Analytical Services, Inc., SEIPO) to A. Comrov (BSA Environmental Services, Inc.) on 10 August 2005.

Lewis, M. 2005b. E-mail correspondence from M. Lewis (Analytical Services, Inc., SEIPO) to A. Comrov (BSA Environmental Services, Inc.) on 11 August 2005.

Lewis, M. 2005c. Information from M. Lewis (Analytical Services, Inc., SEIPO) distributed via e-mail by S. Wienand (SAIC, SEIPO) to J. Beaver (BSA Environmental Services, Inc.) and others on 13 June 2005.

Lyles, T. 2006. E-mail correspondence from T. Lyles (USAMRIID, Universe Technologies) to A. Comrov (BSA Environmental Services, Inc.) on 18 April 2006.

Maryland Department of Labor, 2003. *Licensing and Regulation, Office of Labor Market Analysis and Information*. Labor force and employment statistics obtained from http://www.dllr.state.md.us/lmi/laus/frederla.htm on 16 May 2003.

Maryland Department of Natural Resources. 1999. *State of the Streams: 1995-1997 Maryland Biological Stream Survey Results.* July 1999.

Maryland Department of the Environment. 2005a. Water Conservation Conditions in Maryland, 31 October 2005 and previous, obtained from http://www.mde.state.md.us/Programs/WaterPrograms/Water_Conservation/Current_Conditions/index.asp on 6 December 2005.

Maryland Department of the Environment. 2005b. Air Quality information obtained from http://www.mde.state.md.us/Programs/AirPrograms/airData/airQuality.asp on 1 December 2005.

Maryland Department of the Environment. 2005c. Ozone data collected from the Frederick County Health Department air monitoring station from 1995 to 2001 obtained from http://www.mde.state.md.us/Air/air_quality/HistoricalData/fredrick.asp on 1 December 2005.

Maryland Department of the Environment. 2004. Discharge Permit (National Pollutant Discharge Elimination System Permit No. MD0020877) for the Fort Detrick Wastewater Treatment Plant. Maryland Department of the Environment, Water Management Administration, Surface Discharge Permit Division.

Maryland Department of the Environment. 2003a. Water Conservation Conditions in Maryland, 31 March 2003 and previous, obtained from http://www.mde.state.md.us/Programs/WaterPrograms/Water_Conservation/Current_Conditions/index.asp.

Maryland Department of the Environment. 2003b. NAAQS information for Maryland obtained from http://www.mde.state.md.us/Programs/AirPrograms/airData/national.asp.

Maryland Department of the Environment. 2002. Fort Detrick Incinerator Complex Amendment Request Fact Sheet.

Maryland Department of the Environment. 2001. Consent Order (MDE# C-0-02-SW-033) approved on 14 November 2001.

Maryland Department of the Environment. 2000a. *2000 Maryland Stormwater Design Manual Volumes I and II.* Center for Watershed Protection.

Maryland Department of the Environment. 2000b. Refuse Disposal Permit No. 2000-WIN-0341. Maryland Department of the Environment.

Maryland Department of the Environment. 1999. Case File No. 95-2030FR, Bldg. 190 ASTs and USTs. MDE Waste Management Administration.

Maryland Department of the Environment, Air and Radiation Management Administration. 2005. *MDE 2005 Emissions Certification Reports – 2004 Emissions* data obtained via e-mail correspondence from L. Daniel (MDE, ARMA Public Information Act Liaison) to. A. Comrov (BSA Environmental Services, Inc.) on 17 November 2005.

Maryland Department of Transportation State Highway Administration. 2006. *Traffic Monitoring System Report Module.* Information regarding traffic counts on US 15 obtained from http://www.marylandroads.com/tmsreports/ on 2 February 2006.

Maryland Geological Survey. 2005. Summary of Maryland Earthquakes,1758 – 2005: Fact Sheet no. 13. Fact sheet compiled by J.P. Reger and obtained from http://www.mgs.md.gov/esic/fs/fs13.html on 6 December 2005.

Maryland Historical Trust. 2005. National Register of Historic Places listing for Frederick County, Maryland obtained from http://www.marylandhistoricaltrust.net/NR/NRPickCounty.html on 2 December 2005.

Maryland Historical Trust. 2003. National Register of Historic Places listing for Frederick County, Maryland obtained from http://www.marylandhistoricaltrust.net/NR/NRPickCounty.html on 14 May 2003.

Maryland Office of Environmental Programs. 1986. *Maryland Air and Water Quality Atlas*, Second edition.

Maryland State Data Center. 2005. *Frederick County Demographic and Socio-economic Outlook.* Information obtained from http://www.mdp.state.md.us/MSDC/County/fred05.pdf. on 13 December 2005.

Maryland State Data Center. 2003a. Demographic and Socio-Economic Outlook for Frederick County obtained from http://www.mdp.state.md.us/MSDC/County/fred02.pdf on 16 May 2003.

Maryland State Data Center. 2003b. *New Housing and Construction Value Authorized in Maryland: Annual 2002*. Information obtained from http://www.mdp.state.md.us/MSDC/newhh/newhhidx.htm on 16 May 2003.

Maryland State Office of Climatology. 2005. Climate data for Frederick County based on a thirty-year average obtained from http://www.discoverfrederickmd.com/fastfacts/people/description.cfm on 6 December 2005.

Melbert, J. 2006. E-mail correspondence from J. Melbert (STV, Inc., Planner/Designer) to R. Giesser (BSA Environmental Services, Inc.) on 5 May 2006.

National Cancer Institute and U.S. Army Garrison. 2003. *Environmental Baseline Survey, Potential Expansion of the National Cancer Institute in the Southwest Portion of Area A at Fort Detrick, Maryland*. 3 January 2003.

National Institutes of Health and U.S. Army Garrison. 2003. Final Environmental Impact Statement, Construction and Operation of an Integrated Research Facility by the National Institutes of Health at Fort Detrick, Maryland. 5 December 2003.

National Climatic Data Center. 2005. Records of weather-related events in Frederick County, Maryland, from \1 January 1950 to 31 July 2005 obtained from http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwevent~storms on 6 December 2005.

National Research Council. 1996. DHHS Publication No. 86-23. Guide for the Care and Use of Laboratory Animals. U.S. Department of Health and Human Services.

National Weather Service. 2002. Flood data obtained from http://205.156.54.206/er/lwx/rivers/fdkm2.htm.

Oak Ridge National Laboratory. 2001. *Report on Airborne Geophysical Survey of Fort Detrick, Maryland.* T. Jeffrey Gamey. July 2001.

Potter, L. 2006. E-mail correspondence from L. Potter (USAG, Director, Directorate of Installation Services) to A. Comrov (BSA Environmental Services, Inc.) on 22 March 2006.

Potter, L. 2005a. E-mail correspondence from L. Potter (USAG, Director, Directorate of Installation Services) to A. Comrov (BSA Environmental Services, Inc.) on 23 November 2005.

Potter, L. 2005b. E-mail correspondence from L. Potter (USAG, Director, Directorate of Installation Services) to A. Comrov (BSA Environmental Services, Inc.) on 29 November 2005.

RASCO, Inc. 1996. *Engineering and Economic Feasibility Study, Laboratory Sewer System and Steam Sterilization Plant, Fort Detrick, Maryland*. June 1996.

Restoration Advisory Board. 2006. Fort Detrick Restoration Advisory Board information obtained from http://www.detrick.army.mil/detrick/rab/index.cfm on 13 March 2006.

Riley, R.L., and Kaufman, J.E. 1972. Effect of relative humidity on the inactivation of airborne *Serratia marcescens* by ultraviolet radiation. *Appl Microbiol*. 23(6):1113-20.

Rusnak, Janice M. MD; Kortepeter, Mark G. MD; Aldis, John MD; Boudreau, Ellen MD. 2004a. “Experience in the Medical Management of Potential Laboratory Exposures to Agents of Bioterrorism on the Basis of Risk Assessment at the United States Army Medical Research Institute of Infectious Diseases (USAMRIID),” *Journal of Occupational & Environmental Medicine.* 46(8):801-811, August 2004.

Rusnak, Janice M. MD; Kortepeter, Mark G. MD; Hawley, Robert J. PhD, CBSP; Boudreau, Ellen MD; Aldis, John MD; Pittman, Phillip R. MD. 2004b. “Management Guidelines for Laboratory Exposures to Agents of Bioterrorism,” *Journal of Occupational & Environmental Medicine*. 46(8):791-800, August 2004.

Rusnak, J.M., Kortepeter, M.G., Hawley, R.J., Anderson, A.O., Boudreau, E., and Carr, B. 2004c. Risk of Occupationally Acquired Illnesses from Biological Threat Agents in Unvaccinated Laboratory Workers. *Biosecur Bioterror* 2(4): 281-294.

Schnabel Engineering and Associates, Inc. 2002. *Phase II Environmental Site Assessment Additional Environmental Investigation, New Commissary, Fort Detrick, Porter Street and Randall Street, Frederick County, Frederick, Maryland.* Schnabel Reference No. 02121176).

Secretary of the Army. 2005. *Feasibility Study to Finalize the Mission of the U.S. Army Medical Research Institute of Infectious Diseases and Determine the Infrastructure Requirements*

and Associated Costs. Report to Congress submitted by the Secretary of the Army In Compliance with House Report 107-350. April 2005.

Sewell, D.L. 1995. Laboratory-associated infections and biosafety. *Clinical Microbiology* Reviews 8:389-405.

Sheffer, R. 2006a. E-mail correspondence from R. Sheffer (USAG, Environmental Engineer, SEIPO) to J. Beaver (BSA Environmental Services, Inc.) on 16 March 2006.

Sheffer, R. 2006b. E-mail correspondence from R. Sheffer (USAG, Environmental Engineer, SEIPO) to A. Comrov (BSA Environmental Services, Inc.) on 22 March 2006.

Sheffer, R. 2006c. E-mail correspondence from R. Sheffer (USAG, Environmental Engineer, SEIPO) to J. Beaver (BSA Environmental Services, Inc.) and distributed to the Environmental Compliance Subcommittee on 6 April 2006.

Silvestri, D. 2003. Telephone conversation between D. Silvestri (USAG, SEIPO) and T. Rosati (BSA Environmental Services, Inc.) on 11 August 2003.

Silvestri, D. 2002. Site visit with D. Silvestri (USAG, SEIPO) and J. Hickey (BSA Environmental Services, Inc.) on 5 September 2002.

Soil Conservation Service. 1956. *Soil Survey of Frederick County, Maryland*. U.S. Department of Agriculture, Soil Conservation Service, Washington, DC.

STV, Inc. 2003. *Final Installation-Wide Transportation Study, Fort Detrick*. July 2003.

Summer Consultants, Inc. 2005. *Alternate Laboratory Sewer Systems (LSS) Piping Replacement Study. USAMRIID Sterilization Plant. Building 1407*. DoDM 06/PN 59215.

Tannir, A. 2006. E-mail correspondence from A. Tannir (Frederick County, Manager, Traffic Engineering, Engineering Department) (distributed by D. Lawson) to S. Evans (BSA Environmental Services, Inc.) on 6 April 2006.

Tobias, B. 2006. E-mail correspondence from B. Tobias (Manger, Environmental Protection, NCI-Frederick). To J. Beaver (BSA Environmental Services, Inc.) on 19 May 2006.

Trapp, Henry, Jr. and Marilee A. Horn, USGS. 1997. *Groundwater Atlas of the United States, Delaware, Maryland, New Jersey, North Carolina, Pennsylvania, Virginia, and West Virginia, HA-730-L, Regional Summary*. Geology information obtained from http://capp.water.usgs.gov/gwa/ch_I/L-text1.htm.

URS Corporation. 2005. *Fort Detrick Sanitary Sewer Forcemain Analysis*. October. 2005.

U.S. Army Center for Health Promotion and Preventive Medicine. 2006. *Final Report: Air Pollution Emission Assessment No. 43-EL-004JR-06 Fort Detrick General Refuse Incinerators B1 and B4, Fort Detrick, Maryland. 23 January – 2 February 2006.*

U.S. Army Center for Health Promotion and Preventive Medicine. 2005. *Baseline Wastewater Evaluation and Local Limits Development. Fort Detrick, Maryland. 19 - 28 April 2005*.

U.S. Army Center for Health Promotion and Preventive Medicine. 2001. *Ground-Water Quality, Building 950 Fort Detrick, Maryland*. 31 July 2001.

U.S. Army Center for Health Promotion and Preventive Medicine. 1998. *Ground-Water Quality at Buildings 950 and 950 Fort Detrick, Maryland*. 2 March – 5 March 1998.

U.S. Army Corps of Engineers. 2005a. *Wetland Delineation for Fort Detrick.* April 2005. U.S. Army Corps of Engineers.

U.S. Army Corps of Engineers. 2005b. *Floodplain Analysis and Mapping for Fort Detrick.* April 2005. U.S. Army Corps of Engineers.

U.S. Army Corps of Engineers. 2003. *Draft Environmental Assessment for the Residential Communities Initiative Fort Detrick, Maryland.* January 2003. U.S. Army Corps of Engineers.

U.S. Army Corps of Engineers. 2002a. *Bldg. 190 Groundwater Study, Work Management Plan – Well Installation, Area A, U.S. Army Garrison, Fort Detrick, Frederick, Maryland*. 15 March 2002.

U.S. Army Corps of Engineers. 2002b. *Bldg. 190 Corrective Action Report with Oil Skimmer Operation and Maintenance Guide*. 14 February 2002.

U.S. Army Corps of Engineers. 2001. *Fort Detrick Photogeologic Analysis Amended Final Report, Maryland*. U.S. Army Corps of Engineers, Engineer Research and Development Center, Topographic Engineering Center, Alexandria, Virginia, April 2001.

U.S. Army Corps of Engineers. 2000a. *Integrated Cultural Resources Management Plan, Fort Detrick, Maryland*. January 2000. U.S. Army Corps of Engineers.

U.S. Army Corps of Engineers. 2000b. *Fort Detrick Remedial Investigation Report, Area A, Revised Final, Parts I and II*. June 2000. IT Corporation, Edgewood, Maryland.

U.S. Army Corps of Engineers. 1999. Corrective Action Plan and Site Safety and Health Plan Addendum, Former No. 6 fuel oil UST Site, Boiler Plant, Building 190, Fort Detrick Frederick, Maryland.

U.S. Army Corps of Engineers. 1997. *MCA Barracks Complex Environmental Assessment, Fort Detrick, Maryland*. December 1997. U.S. Army Corps of Engineers and U.S. Army Medical Command.

U.S. Army Corps of Engineers. 1992. *Cultural Resources Management Plan and Maintenance, Rehabilitation and Repair Guidelines for Fort Detrick, Maryland*. August 1992. U.S. Army Corps of Engineers.

U.S. Army Environmental Center. 2005. Information regarding the EPAS program obtained from http://aec.army.mil/usaec/support/epas00.html on 30 December 2005.

U.S. Army Garrison. 2006. *Environmental Assessment for the Construction and Operation of a Veterans Affairs Community-Based Outpatient Clinic at Fort Detrick, MD.* May 2006. U.S. Army Garrison, Fort Detrick, Maryland.

U.S. Army Garrison. 2005a. *Environmental Assessment for the Construction and Operation of a Cogeneration Utility Plant (CUP) by Chevron Energy Solutions Company and Keenan Development (CK) on the East-Central Portion of Area A at Fort Detrick, Maryland*. 30 September 2005. U.S. Army Garrison, Fort Detrick, Maryland.

U.S. Army Garrison. 2005b. *Fort Detrick Stormwater Management Plan for Drainage Areas A-3 and A-4.* Final. July 2005. U.S. Army Garrison, Fort Detrick, Frederick, Maryland.

U.S. Army Garrison. 2005c. *Integrated Natural Resources Management Plan.* Draft. 14 December 2005. U.S. Army Garrison, Fort Detrick, Frederick, Maryland.

U.S. Army Garrison. 2004a. *Environmental Assessment, Revised Area B Master Plan, Fort Detrick, Maryland*. 17 May 2004. U.S. Army Garrison, Fort Detrick, Maryland.

U.S. Army Garrison. 2004b. *Wastewater Treatment Plant Final Radiological Survey Plan and Survey Results*. U.S. Army Garrison, Fort Detrick, Maryland.

U.S. Army Garrison. 2003a. *Environmental Assessment, Installation Master Plan for Fort Detrick, Maryland*. 1 September 2003. U.S. Army Garrison, Fort Detrick, Maryland.

U.S. Army Garrison. 2003b. *Storm Water Pollution Prevention Plan.* 31 January 2003. U.S. Army Garrison, Fort Detrick, Maryland.

U.S. Army Garrison. 2003c*. Investigation of Elevated Tritium Levels in the Garrison's Sanitary Landfill Located in the Fort Detrick Area B*. September 2003. U.S. Army Garrison, Fort Detrick, Maryland.

U.S. Army Garrison. 2003d. *Integrated Pest Management Plan for Fort Detrick and Site R, Frederick, Maryland*. Annual update approved as of 14 February 2003.

U.S. Army Garrison. 2002a. *Environmental Assessment, Fluoridation of the Fort Detrick Drinking Water System*. March 2002. U.S. Army Garrison, Fort Detrick, Maryland.

U.S. Army Garrison. 2002b. *Integrated Natural Resources Management Plan for U.S. Army Garrison Fort Detrick*. February 2002. U.S. Army Garrison, Fort Detrick, Maryland.

U.S. Army Garrison. 2002c. *Environmental Assessment for the Construction and Operation of Family Housing Quarters at Fort Detrick, Maryland*. 16 April 2002. U.S. Army Garrison, Fort Detrick, Maryland.

U.S. Army Garrison. 2001. *Integrated Natural Resource Management Plan*. 2001. U.S. Army Garrison, Fort Detrick, Maryland.

U.S. Army Garrison. 2000a. *Drinking Water System Privatization Environmental Assessment*. March 2000. U.S. Army Garrison, Fort Detrick, Maryland.

U.S. Army Garrison. 2000b. *Water Utility Pollution Prevention Plan.* 13 October 2000. U.S. Army Garrison, Fort Detrick, Maryland.

U.S. Army Garrison. 1998. *Fort Detrick Environmental Planning Guide*. June 1998. U.S. Army Garrison, Fort Detrick, Frederick, Maryland.

U.S. Army Garrison. 1997. *Environmental Assessment for the Construction of Two Sterilization Facilities, Conversion and Abandonment of the Laboratory Sewer System and Deactivation of the Steam Sterilization Plant*. February 1997. U.S. Army Garrison, Fort Detrick, Maryland.

U.S. Army Medical Research and Development Command. 1991. Environmental Assessment of U.S. Army Medical Research Institute of Infectious Diseases. 1991. U.S. Army Medical Research and Development Command, Fort Detrick, Maryland.

U.S. Army Medical Research and Materiel Command. 2004. *Final Programmatic Environmental Impact Statement, Chemical and Biological Defense Program*. May 2004.

U.S. Army Medical Research and Materiel Command. 2002. *Environmental Assessment, Construction and Operation of an Animal Facility on Area A at Fort Detrick, Maryland*. 26 July 2002. U.S. Army Medical Research and Materiel Command, Fort Detrick, Maryland.

U.S. Army Medical Research and Materiel Command. 2001. *Environmental Assessment of U.S. Army Medical Research Institute of Infectious Diseases*. June 2001. U.S. Army Medical Research and Materiel Command, Fort Detrick, Maryland.

U.S. Army Medical Research Institute of Infectious Diseases. 2003. *USAMRIID Feasibility Study.* 30 September 2003.

U.S. Army Medical Research Institute of Infectious Diseases. 2002. Responses to information request, 14 May 2001.

U.S. Army Medical Research Institute of Infectious Diseases. 2001a. *Environmental Assessment of the U.S. Army Medical Research Institute of Infectious Diseases*, prepared by the U.S. Army Medical Research and Materiel Command, Fort Detrick, Maryland, June.

U.S. Army Medical Research Institute of Infectious Diseases. 2001b. Responses to information request, 30 January 2001.U.S. Army Medical Research Institute of Infectious Diseases. 2000a. Responses to information requests, 2 February, 29 February, 7 March, 28 March, 1 June, 13 June, and 16 June 2000.

U.S. Army Medical Research Institute of Infectious Diseases. 2000a. Responses to information requests, 2 February, 29 February, 7 March, 28 March, 1 June, 13 June, and 16 June 2000.

U.S. Army Medical Research Institute of Infectious Diseases. 2000b. *USAMRIID Accident and Illness Reporting* flowchart, dated 2 January 1998.

U.S. Census Bureau. 2004. *U.S. Census Bureau, American FactFinder*. Information regarding the poverty status of persons in census block group 7507-3 (Frederick, Maryland) in 1999 obtained from http://factfinder.census.gov on 22 April 2004.

U.S. Census Bureau. 2002. *U.S. Census Bureau, American FactFinder*. Information regarding the demographics of Frederick, Maryland, based on the 2000 U.S. Census, obtained from http://factfinder.census.gov on 11 December 2002.

U.S. Department of Agriculture. 2002. *Soil Survey of Frederick County, Maryland*. U.S. Department of Agriculture, Natural Resources Conservation Service, Washington, DC.

U.S. Department of Energy. 1996. *Accident Analysis for Aircraft Crash Into Hazardous Facilities.* DOE-STD-3014-96. October 1996.

U.S. Department of Transportation. 2006. Information regarding the Office of Hazardous Materials Safety obtained from http://hazmat.dot.gov/pubs/inc/hmisframe.htm on 12 April 2006.

U.S. Department of Transportation. 2001. U.S. Department of Transportation, *A Comparison of Risk; Accidental Deaths – United States – 1994-1998*, U.S. DOT Research and Special Programs Administration. Information obtained from http://hazmat.dot.gov/rishcompare.htm on March 2001.

U.S. Environmental Protection Agency. 2005a. Monocacy *Watershed Profile* information obtained from http://cfpub.epa.gov/surf/huc.cfm?huc_code=02070009 on 6 June 2005.

U.S. Environmental Protection Agency. 2005b. *Fine Particle (PM2.5) Designations*. Information regarding the Frederick County, Maryland (Washington, DC-MD-VA) nonattainment area designation obtained from http://www.epa.gov/pmdesignations/index.htm on 1 December 2005.

U.S. Environmental Protection Agency. 2005c. *Eight-Hour Ground-Level Ozone Designations*. Information regarding the Clean Air Ozone Rules of 2004 and Frederick County, Maryland (Washington, DC-MD-VA) nonattainment area designation obtained from http://www.epa.gov/ozonedesignations/ on 1 December 2005.

U.S. Environmental Protection Agency. 2005d. *Rule and Implementation Information for Other Solid Waste Incinerators*. Information regarding the proposed new rules affected OSWI obtained from http://www.epa.gov/ttn/oarpg/t3/fact_sheets/32435oswi_fs.html on 1 December 2005.

U.S. Environmental Protection Agency. 2003. *Pesticides: Topical & Chemical Fact Sheets: Paraformaldehyde* obtained from

http://www.epa.gov/pesticides/factsheets/chemicals/paraformaldehyde_factsheet.htm#bkmrk4.

U.S. Environmental Protection Agency Office of the Federal Environmental Executive. 1995. *Guidance for Environmentally and Economically Beneficial Landscape Practices on Federal Landscaped Grounds.* 60 FR 40837-41. 10 August 1995.

U.S. Geological Survey. 2005. *USGS 01643000 Monocacy River at Jug Bridge near Frederick, Maryland*. Daily mean streamflow as of 22 November 2005, and watershed information obtained from http://waterdata.usgs.gov/md/nwis/dv/?site_no=01643000&agency_cd=USGS.

U.S. Geological Survey. 2003. Streamflow date for Monocacy River at Jug Bridge obtained from http://waterdata.usgs.gov/md/nwis/dv?format=html&period=548&site_no=01643000 on 6 March 2003.

U.S. Geological Survey. 2002. *USGS 01643000 Monocacy River at Jug Bridge near Frederick, Maryland.* Lowest monthly mean streamflow information obtained from http://waterdata.usgs.gov/md/nwis/monthly/?site_no=01643000&agency_cd=USGS.

U.S. Geological Survey. 2000. *1900 to 1999 Annual Peak Flow Data for Monocacy River at Jug Bridge near Frederick, Maryland, Station number: 01643000*.

U.S. Geological Survey. 1993. Frederick, Maryland 7.5 minute series topographic quadrangle.

U.S. Green Building Council. 2006. Information regarding the Leadership in Energy and Environmental Design rating system obtained from: http://www.usgbc.org/DisplayPage.aspx?CategoryID=19 on 6 April 2006.

U.S. Green Building Council. 2005a. *LEED-NC Application Guide for Multiple Buildings and On-Campus Building Projects*. October 2005.

U.S. Green Building Council. 2005b. *LEED-NC Green Building Rating System For New Construction & Major Renovations, Version 2.2*. October 2005.

Weiss, H., Ling, C.C., Epp, E.R., Santomasso, A., Heslin, J.M. 1975. Irradiation of *Serratia marcescens* by single and double pulses of high-intensity electrons: oxygen diffusion kinetics and lifetime of oxygen-sensitive species. *Radiat Res.* 61(3):355-65.

Wharton, R. 2006. E-mail correspondence from R. Wharton (USAG, Antiterrorism Officer) to J. Beaver (BSA Environmental Services, Inc.) on 14 April 2006.

Whitaker, J.W. 2006. Memorandum for Distribution: Sustainable Design and Development Policy Update – SPiRiT to LEED Transition from J.W. Whitaker (Deputy Assistant Secretary of the Army [Installations and Housing] OASA [I&E]) on 5 January 2006.

Whitaker, J.W. 2005. Memorandum for Distribution: Interim Policy Guidance - Army Energy Conservation from J.W. Whitaker (Deputy Assistant Secretary of the Army [Installations and Housing] OASA [I&E]) on 27 December 2005.

Wienand, S. 2005. E-mail correspondence from S. Wienand (SAIC/USAG) to distribution list, 28 July 2005.

Williams, E. 2006. E-mail correspondence from E. Williams (USAG, Fort Detrick GIS Manager) to R. Giesser (BSA Environmental Services, Inc.) on 8 March 2006.

Wolf, 2006a. E-mail correspondence from R. Wolf (USAG, Air Programs Manager, SEIPO) to A. Comrov (BSA Environmental Services, Inc.) on 11 April 2006.

Wolf, 2006b. E-mail correspondence from R. Wolf (USAG, Air Programs Manager, SEIPO) to A. Comrov (BSA Environmental Services, Inc.) on 6 January 2006.

Wolf, 2005a. E-mail correspondence from R. Wolf (USAG, Air Programs Manager, SEIPO) to J. Beaver (BSA Environmental Services, Inc.) on 13 September 2005.

Wolf, 2005b. E-mail correspondence from R. Wolf (USAG, Air Programs Manager, SEIPO) to A. Comrov (BSA Environmental Services, Inc.) on 10 June 2005.

World Health Organization. 2002. Communicable Disease Surveillance and Response. *Guidelines for the Safe Transport of Infectious Substances and Diagnostic Specimens.* Information obtained from http://www.who.int/emc/biosafety.html.

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10.0 ACRONYMS AND ABBREVIATIONS

AAALAC	Association for Assessment and Accreditation of Laboratory Animal Care International
AAFES	Army Air Force Exchange Services
ABSL	Animal Biosafety Level
ACHP	Advisory Council on Historic Preservation
AFMLO	Air Force Medical Logistics Office
AR	Army Regulation
ARMA	Air and Radiation Management Administration
AST	Aboveground Storage Tanks
bgs	below ground surface
BMBL	*Biosafety in Microbiological and Biomedical Laboratories*
BMPs	Best Management Practices
BOD_5	biological oxygen demand – 5 days
BRAC	Base Realignment and Closure
BSC	biological safety cabinet
BSL	Biosafety Level
CAA	Clean Air Act
CAP	Corrective Action Plan
CBOC	Community-Based Outpatient Clinic
ccf	hundred cubic feet (natural gas)
CDC	Centers for Disease Control and Prevention
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
cfs	cubic feet per second
CHP	Chemical Hygiene Plan
CO	carbon monoxide
COMAR	Code of Maryland Regulations
COPC	chemicals of potential concern
CUP	Cogeneration Utility Plant
CY	Calendar Year
DA	Department of the Army
DA PAM	Department of the Army Pamphlet
dBA	Decibels Type A
DD	Decision Document
DEIS	Draft Environmental Impact Statement
DERP	Defense Environmental Restoration Program
DHHS	Department of Health and Human Services
DHS	Department of Homeland Security
DIS	Directorate of Installation Services
DNA	deoxyribonucleic acid
DoD	Department of Defense
DOL	Department of Labor
DOT	U.S. Department of Transportation
DRMS	Defense Reutilization and Marketing Service
EA	Environmental Assessment
EIS	Environmental Impact Statement

EMO	Environmental Management Office
EMS	Environmental Management System
ENR	Enhanced Nutrient Removal
EO	Executive Order
EPAS	Environmental Performance Assessment System
EQCC	Environmental Quality Control Committee
ERP	Emergency Response Plan
FCC	Frederick Community College
FCVFRA	Frederick County Volunteer Fire and Rescue Association, Inc.
FD PAM	Fort Detrick Pamphlet
FD REG	Fort Detrick Regulation
F&ESD	Fire and Emergency Services Division
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
FS	Feasibility Study
FSP	Facility Safety Plan
ft.	feet
$ft.^2$	square feet
FY	fiscal year
gpm	gallons per minute
gsf	gross square feet
HAP	hazardous air pollutant
HEPA	high-efficiency particulate air (filter)
HFPA	Health Facility Planning Agency
HI	Hazard Index
HMMO	Hazardous Material Management Office
HMMP	Hazardous Material Management Program
IBC	Institutional Biosafety Committee
ICRMP	Integrated Cultural Resources Management Plan
IMP	Installation Master Plan
INRMP	Integrated Natural Resource Management Plan
IPMP	Integrated Pest Management Plan
IRA	interim removal action
IRF	Integrated Research Facility
IRP	Installation Restoration Program
JRCAB	Joint Readiness Clinical Advisory Board
Kg	Kilograms
kV	Kilovolt
kWh	kilowatt hour
LACUC	Laboratory Animal Care and Use Committee
LAI	Laboratory Acquired Infection
LEED	Leadership in Energy and Environmental Design
LEED-NC	Leadership in Energy and Environmental Design-New Construction
LEPC	Local Emergency Planning Committee
lbs	pounds
LID	Low Impact Development
LOP	Level of Protection
LSS	Laboratory Sewer System
MARC	Maryland Rail Commuter
MCLs	Maximum Contaminant Levels
MDE	Maryland Department of the Environment

MDNR	Maryland Department of Natural Resources
mg	milligrams
mg/kg	milligram per kilogram
mg/L	milligrams per liter
mgd	million gallons per day
MMBtu	million British thermal unit
MSDS	Material Safety Data Sheet
MSW	municipal solid waste
MWR	Directorate of Morale, Welfare and Recreation
NAAQS	National Ambient Air Quality Standards
NBACC	National Biodefense Analysis and Countermeasures Center
NCDC	National Climatic Data Center
NCI-Frederick	National Cancer Institute at Frederick
NEPA	National Environmental Policy Act
NFPA	National Fire Protection Association
NHP	non-human primate
NHPA	National Historic Preservation Act
NIAID	National Institute of Allergy and Infectious Diseases
NIBC	National Interagency Biodefense Campus
NIH	National Institutes of Health
NO_X	nitrogen oxides
NOA	Notice of Availability
NOI	Notice of Intent
NOV	Notice of Violation
NPDES	National Pollutant Discharge Elimination System
NRC	U.S. Nuclear Regulatory Commission
NRHP	National Register of Historic Places
NSABB	National Science Advisory Board for Biosecurity
NSR	New Source Review
OSC	Operational Services Command
OSHA	Occupational Safety and Health Administration
PAHs	Polycyclic Aromatic Hydrocarbons
Pb	Lead
PBC	Performance-Based Contract
PCB	Polychlorinated biphenyl
PCE	Perchloroethylene
PFA	paraformaldehyde
PHS	Public Health Service
$PM_{2.5}$	particulate matter less than 2.5 microns in aerodynamic diameter
PM_{10}	particulate matter less than 10 microns in aerodynamic diameter
PMO	Provost Marshal Office
PPE	Personal Protective Equipment
ppm	parts per million
PSD	Prevention of Significant Deterioration
RAB	Restoration Advisory Board
RCI	Residential Communities Initiative
RCRA	Resource Conservation and Recovery Act
RDT&E	research, development, test, and evaluation
RI	Remedial Investigation
RIP	remedy in place

RPPB	Real Property Planning Board
RPPB-WG	Real Property Planning Board – Working Group
SAP	Satellite Accumulation Point
SARA	Superfund Amendments and Reauthorization Act
SCBA	Self Contained Breathing Apparatus
SDWA	Safe Drinking Water Act
SEIPO	Safety, Environment and Integrated Planning Office
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SO_2	sulfur dioxide
SO_x	sulfur oxides
SO	Standard Operation
SOP	Standard Operating Procedure
SRPO	Safety and Radiation Protection Office
SSP	Steam Sterilization Plant
SVOC	Semi-volatile Organic Compounds
SWPPP	Stormwater Pollution Prevention Plan
T&E	test and evaluation
TAP	toxic air pollutant
TCE	trichloroethylene
TCLP	Toxicity Characteristic Leaching Procedure
tpy	tons per year
TSDF	Treatment, Storage, and Disposal Facility
UEPH	Unaccompanied Enlisted Personnel Housing
USACHPPM	U.S. Army Center for Health Promotion and Preventive Medicine
USACE	U.S. Army Corps of Engineers
USAEC	U.S. Army Environmental Center
USAG	U.S. Army Garrison
USAMMA	U.S. Army Medical Materiel Agency
USAMRIID	U.S. Army Medical Research Institute of Infectious Diseases
USAMRMC	U.S. Army Medical Research and Materiel Command
USC	U.S. Code
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGBC	U.S. Green Building Council
USGS	U.S. Geological Survey
UST	Underground Storage Tank
UTMB	The University of Texas Medical Branch
VEE	Venezuelan equine encephalitis
VMD	Veterinary Medicine Division
VOCs	volatile organic compounds
vpd	vehicles per day
WMA	Waste Management Administration
WWII	World War II
WTP	water treatment plant
WWTP	wastewater treatment plant